



# GOVERNMENT OF RWANDA

AN INTEGRATED ICT-LED SOCIO-ECONOMIC  
DEVELOPMENT PLAN FOR RWANDA

2006-2010

## THE NICI-2010 PLAN

TABLE OF CONTENTS

1

EXECUTIVE SUMMARY

12

PART 1: BACKGROUND AND SITUATIONAL ANALYSIS

16

PART 2: DETAILS OF THE NICI-2010 PLAN

49

PART 3: SUPPORTING DOCUMENTATION AND PLAN DETAILS

323



## FOREWORD

by His Excellency the President



It is with great pleasure that, on behalf of the Government of Rwanda, I present the National Information and Communication Infrastructure policy and plan for 2006-2010 (NICI-2010). This plan will guide us in the adoption and exploitation of modern information and communications technologies to increase the pace of socio-economic development and create value for all citizens. It is the second in a series of four documents, spanning the 20 years required to realise our *Vision 2020*, which aims to bring Rwanda to the level of a middle income, service and knowledge based economy by the year 2020.

Our move towards an ICT and knowledge driven economy is a decision rooted in the practical realities and challenges within Rwanda, but equally it has taken into account recent trends so that Rwanda can position herself to compete in the global economy. Just as it is clear that growth in the 19<sup>th</sup> and 20<sup>th</sup> centuries was driven by networks of railways and highways, growth and development in the 21<sup>st</sup> century is being defined and driven by digital highways and ICT-led value-added services. In Africa, we have missed both the agricultural and industrial revolutions and in Rwanda we are determined to take full advantage of the digital revolution. This revolution is summed up by the fact that it no longer is of utmost importance where you are but rather what you can do – this is of great benefit to traditionally marginalized regions and geographically isolated populations. In our context, it will allow us to make use of our most important and most abundant resource – Our People.

The ability of ICTs to level the global playing field and unlock human potential is exactly why they can accelerate socio-economic development. But beyond that, trends over the past decade have shown us that we must all move towards becoming knowledge workers or our economies will flounder. As more and more populations have the ability to sell their skills to a wider and wider consumer base, we are in an age that rewards those who work smarter and not necessarily harder. Encouraging the proliferation of ICTs has given us access to an array of information and knowledge, unheard of just a couple of years ago. By spreading access to knowledge via modern communication technologies I am determined that we in Rwanda will work smarter. I am personally committed to an ICT-led future for Rwanda and I know that with good planning and sufficient resources, Rwanda can “leapfrog” into the digital-era global economy. Our leaders have been sensitised and we are ready both to follow in the path to prosperity of others who have adopted ICTs and to lead the way for other countries as they embrace the knowledge economy.

To this end, the unveiling of the NICI-2010 ICT policy and plan sees the start of the second phase of our planning and implementation cycle. It is only through sustained high level dedication from all players, and strengthening our NICI-related institutions that we can aspire to the full implementation of NICI. We have high expectations of ICT and its transformative effects in all areas of the economy and society. Communications technology has fundamentally changed the way people live, work and interact socially, and we in Rwanda have no intention of being left behind or standing still as the rest of the globe moves forward at an ever increasing pace. Some might say that we are overreaching but with a positive outlook, strategic work and support from our partners, I am fully confident that we can exploit the potential of ICT in order to achieve our vision of a modern economy for Rwanda and a secure and prosperous future for all.

A handwritten signature in black ink, appearing to read "H.E. PAUL KAGAME". The signature is fluid and cursive, with a large, stylized "K" at the beginning.

H.E. PAUL KAGAME  
President of the Republic of Rwanda

**PREFACE****by the Hon. Minister of State in Charge of Energy and Communications**

It is an exciting time for those of us involved in technology in Rwanda. During the timeframe of the first NICI plan (2001-2005), Rwanda has seen rapid development in many areas, including information and communications technology (ICT), and we are rightly proud of our modest achievements to date. In terms of ICT development, the main emphasis of the NICI-2005 policy and plan was on establishing the necessary institutions and installing and expanding the requisite communications infrastructure. With the institutional arrangements for the implementation of the NICI firmly in place, we expect to see enhanced potential to realize the national ICT policies and goals. While we will strive for continuous improvement in communication infrastructure throughout the NICI process, we now have the foundation from which we can start to build an information-rich, knowledge-based economy and society. Consequently, the NICI-2010 will tackle the implementation of the applications and systems which will use this infrastructure for the greatest impact on Rwanda's development. Naturally, NICI-2010 also addresses the skills and human capacity needed for the execution of the plan, as well as related areas, such as how to foster private sector participation in information technology for national development.

The NICI-2010 document represents the culmination of many months of dedicated work from all stakeholders in ICT in Rwanda. We began in mid 2005 by conducting a comprehensive survey and review of the implementation progress of the NICI-2005 policy and plan. During the policy and plan formulation phase which followed directly after the survey and review, we engaged in extensive dialogues and long deliberations with representatives from government, the private sector, academia and all other interested parties. Then followed the process of synthesizing and crystallizing this wide and varied dialogue into a working document, which had to be both detailed enough to guide implementation and yet simple enough to aid in the overall understanding of the context of our ICT policy.

I would like to express gratitude to all involved in the process for their tenacity and commitment in helping to produce a realistic and relevant policy and plan to guide the nation through the next five years of ICT development. While there have been numerous, diverse contributions from varied sources, I would like to direct a special word of thanks to my staff at MININFRA and RITA for leading and facilitating the process, the NICI-2010 task force and development team (including resource persons, senior management and ICT staff in government ministries and institutions, the private sector and civil society representatives) for their dedication, and partners such as SIDA, UNDP, UNECA, UNIFEM and Microsoft who have worked closely with us and made resources available throughout the process as and when necessary. I am also particularly grateful to the World Bank who have agreed to support critical planned actions relating to e-Government through the e-Rwanda project, as well as to the other partners who have already signalled in one way or another continued support as we roll out the NICI-2010 plan.

With the good working relations and team spirit engendered in the plan development process, I am confident that stakeholders from all domains can continue to count on each other's support throughout the coming years for NICI-2010 implementation.

**ENG ALBERT BUTARE**  
Minister of State in Charge of Energy and Communications

**TABLE OF CONTENTS**

Acronyms and Abbreviations	7
Executive Summary	12
<b>PART ONE: BACKGROUND AND SITUATIONAL ANALYSIS – ESTABLISHING THE BASIS FOR THE PLAN</b>	
Preamble	15
1.0 Background on the Rwandan ICT for Development (ICT4D) Process	16
2.0 An Analysis and Review of the Socio-economic Development Impact of the NICI-2005 Plan Implementation	22
3.0 On the Development of the NICI-2010 PLAN	45
<b>PART TWO: NICI-2010 PLAN PILLARS (OR SUB-PLANS)</b>	
Preamble	49
<i>The Sub-Plan for ICTs in Education</i>	50
<i>The Sub-Plan for Human Capacity Development</i>	52
<i>The Sub-Plan for Infrastructure, Equipment and Content</i>	83
<i>The Sub-Plan for Economic Development</i>	109
<i>The Sub-Plan for Social Development</i>	140
<i>The Sub-Plan for e-Government and e-Governance</i>	164
<i>The Sub-Plan for Private Sector Development</i>	189
<i>The Sub-Plan for Rural and Community Access</i>	242
<i>The Sub-Plan for Legal, Regulatory and Institutional Provisions and Standards</i>	276
<i>The Sub-Plan for National Security, Law and Order</i>	297
	314
<b>PART THREE: SUPPORTING DOCUMENTATION AND PLAN DETAILS</b>	
Appendix 1: e-Readiness Assessment for Rwanda	323
Appendix 2: Planned Actions Development Framework	324
Appendix 3: Elaborating on Some Plan Implementation Issues and Mechanisms	329
Appendix 4: Guidelines for Making Changes	334
Appendix 5: Monitoring, Evaluation and Reporting Framework	345
Appendix 6: Costing and Funding Issues	347
Appendix 7: The Rwandan Electronic Government and Governance Initiative (REGGI)	351
Appendix 8: The e-Rwanda Project	359
Appendix 9: The NICI-2010 Plan Task Force and Team of Resource Persons	384
	392

## INDEX OF NICI-2010 PLANNED ACTIONS

### THE SUB-PLAN FOR ICTS IN EDUCATION

<i>Planned Actions</i>	<b>58</b>
EDU-2.01: Train Primary and Secondary School Teachers on ICTs in Education	61
EDU-2.02: Scholarship Management Program	63
EDU-2.03: Rwanda National Library Network	64
EDU-2.04: Develop New e-Learning Content	65
EDU-2.05: Implement Educational Management Information Systems (EMIS)	67
EDU-2.06: Survey Educational Software	68
EDU-2.07: Convert Existing Computer-Based Training and e-Learning Content to Kinyarwanda	69

### *Planned Actions Rolled Over from the NICI-2005 Plan*

<i>Planned Actions</i>	<b>70</b>
EDUC-1: Program to Promote the Acquisition of Computer Equipment by Educational Institutions	70
EDUC-2: Computers in Schools – “Operation ICT Knowledge for the Youth” Program	71
EDUC-3: The National SchoolNet Project	72
EDUC-4: National Public Awareness Program Targeted at Promoting the Vision for Rwanda (VfR) to Transform Rwanda into a Middle-income, Information-rich and Knowledge-based Society and Economy	74
EDUC-5: An Initiative to Develop a National Computer Curriculum for Primary and Secondary Schools and Coordinate Computer Education in Rwandan Schools	76
EDUC-6: Program to Train a Critical Mass of Computer Literacy Teachers (CLTs)	77
EDUC-7: Program to Train Military Personnel in ICTs	78
EDUC-8: National Program to Speed Up the Deployment, Exploitation and Development of ICTs in Higher Education Institutions	79
EDUC-9: National Electronic Distance Education and Training (NEDET) Program	82
EDUC-10: Special ICT in Education Programs and Initiatives	84
EDUC-11: Initiative to Set Up the Regional Information Technology Institute (RITI)	85

### THE SUB-PLAN FOR HUMAN CAPACITY DEVELOPMENT

<i>Planned Actions</i>	<b>89</b>
HRD-2.01: ICT Capacity-Building in the Public and Private Sector	91
HRD-2.02: Establish ICT Research and Technology Competency Centers	92
HRD-2.03: Human Resources Management/Planning Information System for the Health Sector	93
HRD-2.04: Encourage ICT Certification Programs	95
HRD-2.05: ICT Skills Portal	96

### *Planned Actions Rolled Over from the NICI-2005 Plan*

<i>Planned Actions</i>	<b>97</b>
HRD-1: Initiatives to Examine and Monitor the Human Resource Status of the Country and Set Up Relevant Human Resource Development Facilitating Structures and Bodies	97
HRD-2: Program to Promote the Acquisition of Computer Equipment by Civil and Public Service Organizations	97
HRD-3: Program to Facilitate the Private Sector to Invest in Human Resource Development	98
HRD-4: Initiative to Promote Home Ownership of Computers	98
HRD-5: Program for ICT Skills Development and Upgrading in the Civil and Public Service	99
HRD-6: Program to Improve Management, Policy Formulation, Planning, Execution and Monitoring Skills in the Civil and Public Service	101
HRD-7: Program to Support Professional Level Skills Development in Targeted Lead Sectors of the Economy, the Service Sector and the ICT Industry	102
HRD-8: Program to Improve the ICT Human Resource Development Capacity of the National University of Rwanda (NUR), the Kigali Institute of Science and Technology (KIST), the Kigali Institute of Education (KIE) and Other Institutions of Higher Learning	103

HRD-9: Program to Set Up a National HRD Fund to Provide Grants to Selected Public and Private Sector Organizations, Academic Institutions and Businesses to Participate in National HRD Programs	104
HRD-10: Special Human Resource and Skills Development and Upgrade Initiatives	105
HRD-11: An Initiative to Set Up the National Vocational Training Commission (NVTC)	107
HRD-12: Initiative to Formulate Guidelines and Standards for the Provision of ICT Education and Training Services by Private and Public Institutions	108
HRD-13: Program to Define Standards for the Certification of ICT Professional Skills in Rwanda and to Promote Professional Standards in the ICT Profession	110

### THE SUB-PLAN FOR INFRASTRUCTURE, EQUIPMENT AND CONTENT

<i>Planned Actions</i>	<b>115</b>
IEC-2.01: Enhance ICT Infrastructure in the Public Sector	119
IEC-2.02: The National GIS Center	119
IEC-2.03: Public Sector Data Dictionary and Data Exchange	122
IEC-2.04: Convert ICT Equipment and Software to Support Kinyarwanda	124
IEC-2.05: Improve Electrical Power Quality	126
IEC-2.06: Increase Government’s Yearly ICT Budget	127
IEC-2.07: Use Media to Promote ICT	128
IEC-2.08: Launch Project for the On-going Collection and Publishing of ICT Data	129
IEC-2.09: The Citizen’s Guide to Road and Transportation Information	130
IEC-2.10: Increase International Bandwidth	131
IEC-2.11: Optical Fiber Network on the Infrastructure of Electrogaz	133
IEC-2.12: The National Communications Master Plan	134
IEC-2.13: Karisimbi Integrated Energy and Communications Project	134
IEC-2.14: Development of an ICT Park and Incubator	135
IEC-2.15: Managing the Top Level Domain of Rwanda	136

### *Planned Actions Rolled Over from the NICI-2005 Plan*

<i>Planned Actions</i>	<b>139</b>
IFR-1: Initiatives to Liberalize the Communication Sector and to Facilitate Universal Access to ICT Infrastructure and Services	139
IFR-2: Initiatives to Expand, Rehabilitate and Upgrade the Existing ICT Infrastructure	140
IFR-3: Fast Track National Communications Infrastructure Development Initiative	141

### THE SUB-PLAN FOR ECONOMIC DEVELOPMENT

<i>Planned Actions</i>	<b>146</b>
ECD-2.01: Management of Natural Resources	152
ECD-2.02: National Agricultural Information System	152
ECD-2.03: Agricultural Market Information System	153
ECD-2.04: Biodiversity Information Exchange	154
ECD-2.05: Land Use Management and Information System	155
ECD-2.06: Mineral Resources Management	156
ECD-2.07: Agricultural Credit Management System	159
ECD-2.08: Develop Women-Operated Cottage Industries	160
ECD-2.09: Encourage Foreign Direct Investments in the ICT Sector	161
ECD-2.10: National Awards for Excellence in ICT	163
ECD-2.11: The Tourist Network	164
ECD-2.12: Create Incentives for ICT Companies	165
ECD-2.13: Market and Commodity Exchange	166

<b>THE SUB-PLAN FOR SOCIAL DEVELOPMENT</b>	<b>170</b>			
<i>Planned Actions</i>	175			
SOC-2.01: Drug Procurement and Tracking System	175			
SOC-2.02: The Citizen's Guide to Health Information and Services	176			
SOC-2.03: Resource Management Portal for Major Diseases	177			
SOC-2.04: Integrated Health Information Management System	178			
SOC-2.05: Develop Content Material for Media Broadcast	180			
SOC-2.06: National Employment Processing and the Job Opportunities Portal	182			
SOC-2.07: The Youth Network	183			
SOC-2.08: Vaccine Notification System	185			
SOC-2.10: Volunteering Services and Charities Network	186			
SOC-2.10: The Citizen's Guide to Skilled and Craft Services on the Web	187			
SOC-2.11: Sports and Recreational Network	188			
SOC-2.12: The Citizen's Guide to Labor Relations	189			
SOC-2.13: Disability Legal Framework	190			
SOC-2.14: Disability Training, Counseling and Technology Center	191			
SOC-2.15: Virtual Citizen Communities	192			
<b>THE SUB-PLAN FOR E-GOVERNMENT AND E-GOVERNANCE</b>	<b>195</b>			
<i>Planned Actions</i>	199			
GOV-2.01: Document Tracking and Workflow Management	199			
GOV-2.02: The Citizen's Guide to Governmental Procedures	200			
GOV-2.03: Rwanda National Portal	202			
GOV-2.04: Budget Management System	204			
GOV-2.05: Tax Management System	205			
GOV-2.06: External Finance Inflow Management System	206			
GOV-2.07: Public Accounting	207			
GOV-2.08: Border Control and Visa Issuing	208			
GOV-2.09: Implementation of a National ID and Smartcard System	209			
GOV-2.10: Automation of Postal Services	210			
GOV-2.11: Establishment of an Information Decision Support Center (IDSC)	211			
GOV-2.12: Develop Strategic ICT Plans for Each Ministry and Agency	212			
GOV-2.13: Donor Coordination Network	214			
GOV-2.14: The Citizen's Guide to Parliamentary Operations	214			
GOV-2.15: Parliament Management Automation	215			
GOV-2.16: Transport Management Information System	216			
GOV-2.17: The National Computer Center (NCC)	217			
GOV-2.18: Establish the National Information Center (NIC)	218			
GOV-2.19: Establish a Management Information System in RITA	219			
GOV-2.20: Automation of Street Names	220			
<i>Planned Actions Rolled Over from NICI-2005 Plan</i>	221			
GOV-1: Initiative to Set Up NICI-2010 Plan Execution and Coordination Structures within Government Ministries, Public Service Organizations and Other Organizations and Establishments Involved in the Implementation of the National Plan	221			
GOV-2: Program to Set Up Information Technology Services Division or Directorate (ITSD) in Government Ministries and Public Service Organizations	222			
GOV-3: The Government Computerization Project	224			
GOV-4: GovNet – the Government Intranet Project	226			
GOV-5: The GOR Web-Presence Development Project	227			
GOV-6: National Geographic Information System (GIS) Applications Project	228			
GOV-7: Special Government ICT Initiatives	229			
GOV-8: The Smart Government Initiative (SGI)				231
GOV-9: Developing Robust, Flexible and Scalable Architecture for Supporting Across-the-Board Enforcement of Standards, Application System Integration and Sharing Across Ministries and PSOs				232
CMN-3: Special Initiatives to Facilitate the Rapid Deployment and Exploitation of ICTs in the Community				235
CMN-4: Computer-based Information System Implementation Initiatives targeted at the Delivery of Community-based Government Services: Phase 1 Projects				237
CMN-5: Computer-based Information System Implementation Initiatives Targeted at the Delivery of Community-based Government Services: Phase 2 Projects				240
<b>THE SUB-PLAN FOR PRIVATE SECTOR DEVELOPMENT</b>	<b>248</b>			
<i>Planned Actions</i>				
PSD-2.01: Business Start-up Advisor				251
PSD-2.02: Trade Information Center				251
PSD-2.03: Activate and Speed Up On-line Banking				252
PSD-2.04: The ICT Export Promotion Program				254
PSD-2.05: Trade Points for Rwanda				255
PSD-2.06: Publish Terms of Tenders and Bids				256
PSD-2.07: National Business Development Services Network				257
PSD-2.08: Establish e-Commerce Resources Services Centers				258
<i>Planned Actions Rolled Over from the NICI-2005 Plan</i>				259
PSR-2: Programs to Promote the Development and Expansion of a Local Industry for Assembling, Repair, and Maintenance of Computers and Peripheral Equipment and Computer Systems				260
PSR-3: Program to Promote the Development of Software Technology Parks (STPs)				262
PSR-4: Program to Develop and Implement Guidelines and Internationally-accepted Standards for the Provision of ICT Services by the Private Sector				263
PSR-5: Electronic Commerce (e-Commerce) and Electronic Trade (e-Trade) Initiative				264
PRS-6: The Electronic Banking Initiative				266
PRS-7: Special Initiatives to Facilitate the Rapid Development of an Export-Oriented Software Services and Product Development Industry				268
PRS-8: Business and Career Development Support Services Initiative				270
FDI-1: The Foreign Direct Investment (FDI) Promotion Study Initiative				272
FDI-2: Export Processing and Free Zone (EPFZ) Initiatives Targeted at Both Domestic and Foreign ICT Producers and Service Providers				273
FDI-3: Initiative to Promote Rwanda as a Competitive Destination for FDI in ICTs				275
FDI-4: Initiatives to Attract Foreign and Domestic Investment to Facilitate Rapid Infrastructure Development and Expansion				276
FDI-5: Special Foreign Direct Investment (FDI) and Export Promotion Initiatives				277
<b>THE SUB-PLAN FOR RURAL AND COMMUNITY ACCESS</b>	<b>282</b>			
<i>Planned Actions</i>				
RCA-2.01: Telemedicine and e-Diagnosis Project				284
RCA-2.02: The Agrobus Project				285
RCA-2.03: Early Warning System				286
RCA-2.04: Multipurpose Community Telecenters (MCTs)				288
RCA-2.05: Free Information Access Points				291
RCA-2.06: Text to Audio – Kinyarwanda Talkster				292
RCA-2.07: Establish Data Entry and Transcription Centers				292
RCA-2.08: Low Income Family PC Kit				294

RCA-2.09: Make Rural Telephony Network Accessible and Affordable	295
<i>Planned Actions Rolled Over from the NICI-2005 Plan</i>	296
CMN-1: The National Multipurpose Community TeleCenter (MCT) Project	296
CMN-2: The National Telemedicine Project	297
CMN-6: Special Programs and Initiatives to Facilitate the Active Involvement of Women in ICTs	299
<b>THE SUB-PLAN FOR LEGAL, REGULATORY AND INSTITUTIONAL PROVISIONS AND STANDARDS</b>	<b>303</b>
<i>Planned Actions</i>	305
LRI-2.01: On-line Access to Laws and Regulations	305
LRI-2.02: Automate the Criminal Justice Information System (CRIJIS)	306
LRI-2.03: Develop a Legal Framework for ICT	307
LRI-2.04: Implement ICT Standards and Guidelines	310
LRI-2.05: A Global Kinyarwanda, English and French Glossary	311
LRI-2.06: The Citizen's Guide to Legal Issues	312
<i>Planned Actions Rolled Over from the NICI-2005 Plan</i>	314
LRI-1: Initiatives to Facilitate the Necessary Regulatory Enabling Environment for the Promotion and Development of the Information and Knowledge Economy	314
LRI-2: Initiatives to Facilitate an Enabling Legal and Legislative Environment for the Development and Exploitation of ICTs in Rwanda	314
LR1-3: Initiatives to Put in Place the Necessary Institutional Framework, Structures and Bodies for Supporting the Implementation of National ICT4D Policies, Strategies and Plans	315
LRI-4: Initiatives to Facilitate Standards, Best Practices and Guidelines for ICT Deployment and Exploitation in the Society and Economy	315
<b>THE SUB-PLAN FOR NATIONAL SECURITY, LAW AND ORDER</b>	<b>320</b>
<i>Planned Actions</i>	322
NSL-2.01: Strengthen ICT Competence in the National Security Specialized Units	322
NSL-2.02: ICT Training Labs for Security Services	323
NSL-2.03: Automation of the Ministry of Defence's Headquarters	324
NSL-2.04: Professional Mobile Radio for the Security Forces	324

## ACRONYMS AND ABBREVIATIONS

ACM	Association of Computing Machinery
AIDS	Acquired Immune Deficiency Syndrome
AISI	African Information Society Initiative
ASP	Application Service Provider
ATM	Asynchronous Transfer Mode
AVU	African Virtual University
B2B	Business-to-Business
B2C	Business-to-Consumer
B2G	Business-to-Government
BI	Business Intelligence
BMS	Budget Management System
BoP	Balance of Payments
BOS	Business Online System
CABDAC	Career and Business Development Advisory Centre
CADIS	Cabinet Decision Information System
CAPMER	Centre d'Appui aux Petites et Moyennes Entreprises au Rwanda
CBO	Community-Based Organization
CBT	Computer Based Training
CCNA	Cisco Certified Network Associate
ccTLD	Country Code Top Level Domain
CD	Compact Disc
CD-ROM	Compact Disc Read Only Memory
CDMA	Code Division/Detect Multiple Access
CEIK	Community Electronic Information Kiosks
CEIS	Custom and Excise Information System
CHK	Central Hospital of Kigali
CIF	Cost Insurance and Freight
CISA	Certified Information Systems Auditor
CLT	Computer Literacy Teacher
CME	Continuing Medical Education
CMN	code for – Deployment and Spread of ICTs in the Community Pillar (NICI 2005)
COMIS	Communal Information System
CRIJIS	Criminal Justice Information System
CSO	Civil Society Organization
CTIS	Corporate Tax Information System
CWG	Cluster Working Group
DECB	Data Exchange Control Board
DIPIS	Disaster Preparedness Information System
DLP	Distance Learning Program
DOS	Denial of Service
DPTS	Drug Procurement and Tracking System
DTP	Distance Learning Program
DSS	Decision Support System
ECA	Economic Commission for Africa
ECD	Economic Development
EDE	Electronic Distance Education
EDET	Electronic Distance Education Training
EDI	Electronic Data Interchange
EDUC	code for – ICTs In Education Pillar (NICI 2005)
E-ICT	Electronics and ICT Integrated Training Center
EISA	Enterprise Information Architecture
EMIS	Educational Management Information System
ENIS	Environmental Monitoring Information System
EPfZ	Export Processing and free Zone

## Acronyms and Abbreviations

ERSC	E-Commerce Resource Service Centre	KBE	Knowledge Based Economy
ETPC	Electronic Trade Point Centre	Kbps	Kilo-bit per second
ETSI	European Telecommunication Standards Institute	KCE	Kigali Center for Entrepreneurs
EWS	Early Warning System	KIE	Kigali Institute of Education
FACHR	Fédération des Associations et Centres pour Handicapés au Rwanda/Federation of Associations and Centers of People with Disabilities of Rwanda	KIST	Kigali Institute of Science and Technology
FAQ	Frequently Asked Question	KPI	Key Performance Indicators
FDI	Foreign Direct Investment	LAN	Local Area Network
FEM	Fond pour l'Environnement Mondial	LARIS	Land Records Information System
FEWIS	Food Security and Early Warning System	LDAP	Lightweight Directory Access Protocol
FM	Frequency Modulation	LEO	Low Earth Orbit Satellite System
FOB	Freight on Board	LGCB	Local Government Computer Bureau
G2B	Government-to-Business	LLIN	Long Lasting Impregnated Nets
G2C	Government-to-Citizen	LRI	code for – Legal, Regulatory and Institutional Provisions and Standards Pillar (NICI 2005)
G2G	Government-to-Government	M&E	Monitoring and Evaluation
GDP	Gross Domestic Product	MCL	Mobile Computer Laboratory
GEP	Global Environment Facility Project	MCT	Multipurpose Community TeleCenter
GEPSS	Government Electronic Procurement and Settlement System	MDGs	Millennium Development Goals
GIS	Geographic Information System	MIFOTRA	Ministry of Public Service, Training, Skills Development and Labor
GNI	Gross National Income	MIJESPOC	Ministry of Youth, Culture and Sports
GOR	Government of Rwanda	MINADEF	Ministry of Defense
GOV	code for – Facilitating Government Administration and Service Delivery (e-Government) Pillar (NICI 2005)	MINAFFET	Ministry of Foreign Affairs and Cooperation
GovNet	Government Intranet Project/Government Wide Network	MINAGRI	Ministry of Agriculture and Livestock
GPS	Global Positioning System	MINALOC	Ministry of Local Administration, Community Development and Social Affairs
GSM	Global System for Mobile Communication	MINECOFIN	Ministry of Finance and Economic Planning
HIDA	Human Resource Institutional Capacity Development Agency	MINEDUC	Ministry of Education
HIV	Human Immunodeficiency Virus	MINICOM	Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives
HR	Human Resource	MINIJUST	Ministry of Justice
HRD	Human Resource Development	MININFRA	Ministry of Infrastructure
HRM	Human Resource Management	MININTER	Ministry of Internal Security
HRMS	Human Resource Management System	MINISANTE	Ministry of Health
IAP	Information Access Point	MINITERE	Ministry of Lands, Environment, Forestry, Water and Natural Resources
ICANN	Internet Corporation for Assigned Names and Numbers	MIPIS	Military Personnel Information System
ICDL	International Computer Driving Lesson	MIS	Management Information System
ICPR	Institute of Computer Professionals of Rwanda	MN	Million
ICT	Information and Communications Technology	MOD	Ministry of Defence
ICT4D	ICT for Development	MSC	Ministerial Solutions Committee
ID	Identity	MTEF	Medium Term Extended Framework
IDA	International Donor Agency	NAHIS	National Health Information System
IDSC	Information Decision Support Centre	NANSIS	National Nutritional Surveillance Information System
IEC	Infrastructure, Equipment and Content	NBS	National Bureau of Statistics
IEEE	Institute of Electrical and Electronic Engineers	NCC	National Computing Centre
IF	Integrated Framework	NEAP	National Archive Project
IFMIS	Integrated Financial Management System	NEDET	National Electronic Distance Education
IFR	code for – Infrastructure Development Pillar (NICI 2005)	NELA	National Electronic Libraries
IKE	Information and Knowledge Economy	NETODIS	National Education and Training Opportunities Database System
IP	Internet Protocol	NGDC	National Geographic Data Committee
IPOSTA	National Post Office of Rwanda	NGO	Non-Governmental Organizations
ISP	Internet Service Provider	NHRDA	National Human Resource Development Agency
ISDN	Integrated Services Network	NIC	National Information Centre
IT	Information Technology	NICI	National Information and Communications Infrastructure
IT IS	Income Tax Information System	NICTI	National ICT Initiative
ITF	Interoperability Framework	NIS	National Institute of Statistics
ITSD	Information Technology Services Directorate or Division	NITC	National Information Technology Commission
ITU	International Telecommunication Union	NLLI	National Life-Long Learning Initiative
		NOC	National Olympic Committee

## Acronyms and Abbreviations

NPDU	NICI Plan Development Unit	RORIS	Roads Records Information System
NSL	National Security, Law and Order	RPA	Roll-Over Action Plan
NSS	National Security Service	RPSF	Rwandan Private Sector Federation
NUR	National University of Rwanda	R-TAIS	Rwanda Tax Administration and Information System
NVCT	National Vocational Training Commission	RUDIS	Rural Development Information System
OECD	Organization for Economic Cooperation and Development	RURA	Rwanda Utilities Regulatory Agency
OPGW	Optical Ground Wire	RWC	Rwandan Workers College
ORINFOR	Office Rwandais d'Information	SCA	Software Certification Agency
ORTPN	Office Rwandes de Tourisme et des Nationaux (Rwanda National Tourism Office)	SCADA	Supervisory Control and Data Acquisition
PADIS	Parliamentary Database Information System	SFAR	Student Financing Agency of Rwanda
PAE	Predominately Agriculture based Economy	SGI	Smart Government Initiative
PAMIS	Physical Assets Management Information System	SIDA	Swedish International Development Agency
PC	Personal Computer	SMART	Specific, Measurable, Achievable, Realistic and Timely/Time-bound
PDPC	Public Data Processing Centers	SME	Small and Medium Enterprise
PECC	Plan Execution and Coordination Committee	SOC	Social Development
PEMU	Programme Evaluation and Monitoring Unit	SOSSIS	Social Services Information System
PIK	Public Information Kiosk	SSA	Sub-Saharan Africa
PIKE	Predominately information and knowledge-base economy	STP	Software Technology Park
PIS	Planning Information System	TAI	Technology Achievement Index
PISA	Portable Information System Architecture	TAS	Tax Administration System
PIU	Project Implementation Unit	TB	Tuberculosis
PMI	Project Management Institute	TBM	Time-Bound Measurable Targets
PMP	Project Management Professional	TCC	Technology Competency Centre
PMR	Professional Mobile Radio	TF	Task Force for NICI II
POP	Point of Presence	THVF	Thousand Hills Venture Fund
PRIMATURE	Service du Premier Ministre	TITT	Train the IT Teacher
PRS	code for - Developing and Facilitating the Private Sector Pillar (NICI 2005)	TOR	Terms of Reference
PRSC	Plan Review Standing Committee	TPIS	Tourism Promotion Information System
PRSP	Poverty Reduction Strategy Paper	UN	United Nations
PSD	Private Sector Development	UNCTAD	United Nations Conference on Trade and Development
PSCBP	World Bank Project: Public Sector Capacity-Building Project	UNDP	United Nations Development Program
PSCBP/WB-EU	World Bank/EU Trust Fund to support SmartGov Financial Applications	UNECA	United Nations Economic Commission for Africa
PSO	Public Service Organization	UNESCO	UN Educational, Scientific and Cultural Organization
PSTN	Public Switched Telephone Network	UNIFEM	United Nations Development Fund for Women
PTA	Parent Teacher Association	UPS	Uninterruptible Power Supply
PYBOS	Pay Your Bills Online System	UPU	Universal Postal Union
PYTOS	Pay Your Tax Online System	USAFA	Universal Service and Access Fund
R & D	Research and Development	USAID	United States Agency for International Development
RAGRIS	Rwanda Agricultural Information System	US\$	United States Dollar
RARN	Rwanda Academic Research Network	VFR	Vision for Rwanda
RCA	Rural Community Access	VoIP	Voice over Internet Protocol
REDEMI	Regie d'Exploitation et de Developpement des Mines	VSAT	Very Small Aperture Terminal
REGGI	Rwanda Electronic Government and Governance Initiative	WAN	Wide Area Network
REIPA	Rwanda Investment Promotion Authority	WG	Working Group for NICI Plan
RELI	Rwanda Electronic Library Initiative	WiFi	Wireless Fidelity
RESSI	Rwanda Experimental SMART School Initiative	WISP	Wireless Internet Service Provider
RFP	Request for Proposal	WSIS	World Summit on Information Society
RIAM	Rwanda Institute of Administration and Management	WTO	World Trade Organization
RICTA	Rwanda Information Communication Technology Association	XML	eXtensible Markup Language
RIEPA	Rwanda Investment and Export Promotion Agency	Y2K	Year Two Thousand
RICTA	Rwanda ICT Association	YITE	Young Information Technology Entrepreneurs
RINEX	Rwanda Internet eXchange Point	YTS	Youth Training Scheme
RIRTC	Regional ICT Research and Training Center		
RITA	Rwandan Information Technology Authority		
RITI	Regional Information Technology Institute		
RMP	Resource Management Portal		

## EXECUTIVE SUMMARY

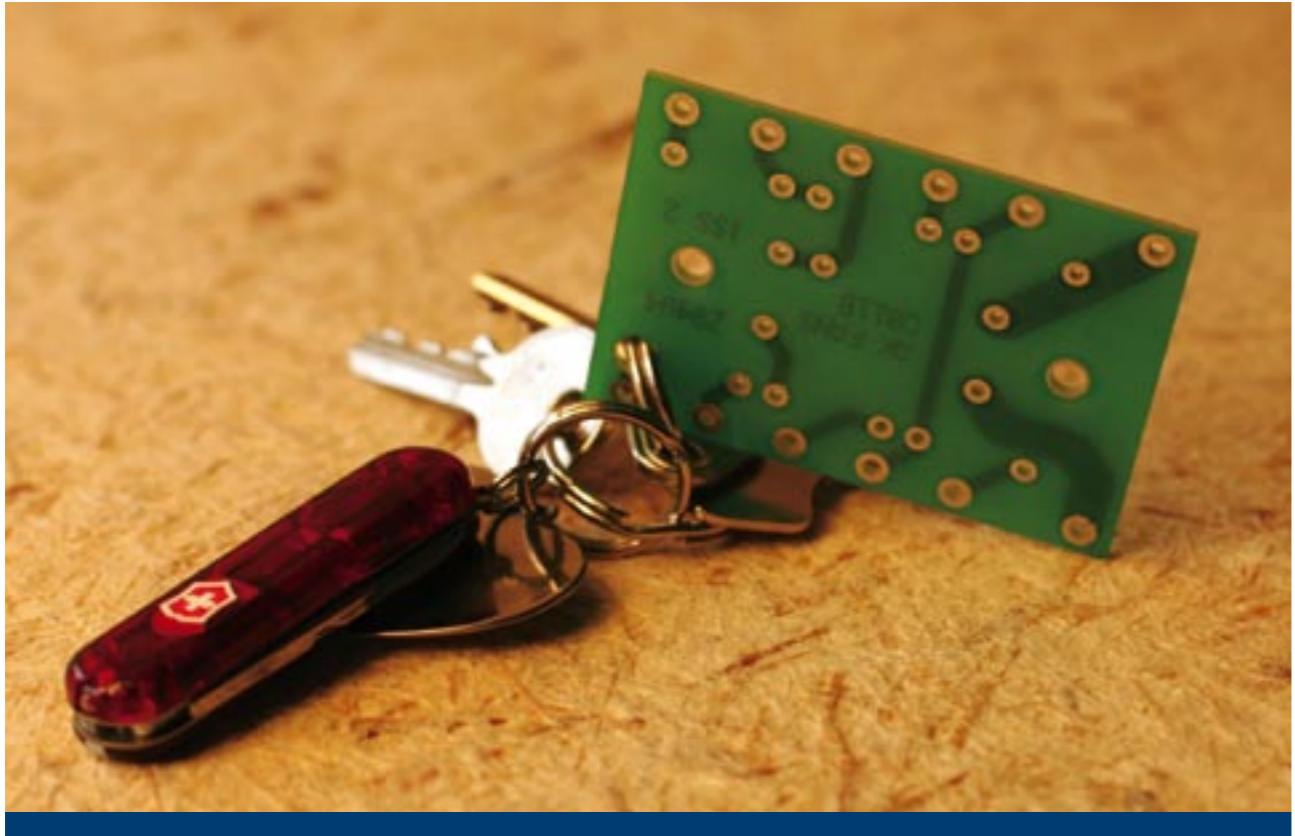
The Rwandan ICT for Development (ICT4D) process is aimed at facilitating the socio-economic development of Rwanda, through the deployment and exploitation of information and communications technologies (ICTs) within the economy and society. The process began in 1998 under the auspices of the Africa Information Society Initiative (AISI) of the Economic Commission for African (ECA).

The first phase of the process concentrated on the development of a comprehensive ICT-led Integrated Socio-economic Development Framework for Rwanda (known as the *Framework Document*). This was followed by the development of an ICT-led Integrated Socio-economic (ICT4D) Policy for Rwanda in 2000. The ICT4D was aimed at facilitating the transformation of Rwanda into an information-rich knowledge-based society and economy within 20 years. The first ICT4D Plan (2001–2005) for Rwanda – the National Information and Communication Infrastructure (NICI-2005) Plan – targeted at implementing Government's policy goals and commitments of the ICT4D Policy, was launched in 2001. The implementation of this plan, the first of four five-year rolling NICI Plans envisaged within the 20-year time-frame of Rwanda's *Vision 2020*, came to completion in 2005.

The review of the implementation of the NICI-2005 Plan in 2005 has been carried out (as part of the phase 1 process) to analyze the socio-economic impact of the Plan, and draw lessons for the development and the implementation of the subsequent NICI plans.

The Rwanda ICT4D process is now in its second phase. This phase focuses on the development and implementation of the NICI-2010 Plan – scheduled for implementation from 2006 to 2010. One goal of the NICI-2010 Plan is to build on the achievements of the NICI-2005 Plan. Emphasis is on supporting and strengthening Rwanda's economic base and improving the economic environment to accelerate development and growth, and work towards achieving a predominantly information- and knowledge-based economy. The new Plan hopes to achieve this by focusing on wealth creation, poverty reduction, and employment generation.

The review of the NICI-2005 Plan identified a number of the roll-over programs and initiatives that have been incorporated into the follow-up NICI-2010 Plan. The NICI planning process, made up of the four NICI plans, is premised on the principle of roll-over. These four plans are not distinct, mutually exclusive, self-contained plans but rather rolling plans – with one plan rolling into another. The NICI-2010 Plan is perceived



as a continuation of NICI-2005 Plan. The details of the NICI-2010 Plan are presented in this document – which is divided into three parts.

*Part One* establishes the basis for the development and implementation of the NICI-2010 Plan, by : (i) providing a detailed situational analysis capturing the background to the Plan at the end of the implementation of the NICI-2005 Plan; (ii) documenting the wider policy context within which the NICI-2010 Plan was developed; (iii) providing an analysis and a review of the socio-economic development impact of the implementation of the NICI-2005 Plan, starting with an analysis of the socio-economic status and the ICT landscape of the country at the start of the process and details for guiding the development of the NICI-2010 Plan, with particular emphasis on how the NICI-2010 Plan can contribute towards realizing the vision of transforming Rwanda into an information-rich and knowledge-based society and economy by 2020.

*Part Two* provides details of the actual Plan – which is structured in terms of the following sub-plans – each representing a pillar of the NICI-2010 Plan:

- ICTs in Education
- Human Capacity Development
- Infrastructure, Equipment and Content
- Economic Development
- Social Development
- e-Government and e-Governance
- Private Sector Development
- Rural and Community Access
- Legal, Regulatory and Institutional Provisions and Standards
- National Security, Law and Order

The components of each of the sub-plans take into account: (i) the achievements and lessons learnt in relation to the implementation of the NICI-2005 Plan; (ii) the need to regard the NICI-2010 Plan as one of four rolling plans envisaged for implementing the provisions of the ICT4D Policy within the time-frame of the *Vision 2020*; (iii) the guiding premise, principles and other specific requirements for developing the details of the Plan; and (iv) the various stakeholder contributions and inputs generated during the consultative process on the Plan.

For each of the sub-plans, the relevant Vision for Rwanda (VfR) missions, as well as the relevant ICT4D Policy commitments of the Government and the relevant ICT4D Policy expectations are documented.

The Planned Actions (or Solutions) designed for the realization of the Government's ICT4D policy intentions and commitments are documented for each of the sub-plans. Each of these Planned Actions has associated with it a due date, or time-bound measurable targets and corresponding implementation agencies. Also documented for each of the Planned Actions is an indication of its relation to a particular roll-over NICI-2005 plan-action.

The details of the NICI-2005 Plan roll-overs into the NICI-2010 Plan are also documented for each sub-plan. Finally, each of the sub-plans is analyzed in terms of how it relates to the Vision for Rwanda (VfR) Mission Strategies, and to what extent its implementation will contribute to the realization of the GOR's multi-sectoral economic development policy and the ICT-2020 policy. Given that the ultimate objective is to transform Rwanda into an information-rich, knowledge-based society and economy (IKE), the contribution that the implementation of the Planned Actions of each of the sub-plans will make towards the development of the IKE is also considered. The achievement of the specific goal of developing the IKE constitutes the developmental benefits that Rwanda will derive from implementing the initiatives of each sub-plan. The risk factors associated with the implementation of each of the sub-plans are also considered.

The development of the details of both the NICI-2005 Plan and the NICI-2010 Plan, is based on several guiding principles. The key principle is the need to aim the Plan at contributing to the realization of the Vision for Rwanda (VfR) as well to the achievements of the relevant missions and the strategies of the Vision. Another crucial guiding principle is to take into account that the Government will continue to formulate and implement its short- to medium-term socio-economic development and budgetary plans during the life-span of the Plan. In this respect, the NICI-2010 Plan is not aimed at substituting this exercise. Rather it serves as a point of policy reference and a framework for complementing and supplementing this exercise within the context of the Government's long-term goal to transform Rwanda into an information-rich, knowledge-based economy by pursuing an ICT-led socio-economic development policy.

Finally, *Part Three* provides supplementary information and details on the NICI-2010 plan-development process and on the Plan implementation support details.



# PART ONE

## THE NICI-2010 PLAN

### BACKGROUND AND SITUATIONAL ANALYSIS:

### ESTABLISHING THE BASIS FOR THE PLAN

“YOU SEE THINGS AND YOU SAY ‘WHY?’ BUT I DREAM OF THINGS  
THAT NEVER WERE AND I SAY ‘WHY NOT?’ ”  
GEORGE BERNARD SHAW, IRISH POET





## PREAMBLE

Part One of the NICI-2010 Plan is a detailed situational analysis aimed at providing and establishing the basis for the development and implementation of the Plan. It is divided into three sections.

In Section 1, the background to Rwanda's ICT4D process is presented, with a view to documenting the wider policy context within which the NICI-2010 Plan is developed.

Section 2 concentrates on an analysis and review of the socio-economic development impact of the implementation of the NICI-2005 Plan, starting with an analysis of the socio-economic status and the ICT landscape of the country at the beginning of the process.

Section 3 focuses on the details for guiding the development of the NICI-2010 Plan, with particular emphasis on how the NICI-2010 Plan can build on the achievements of the NICI-2005 Plan towards the realization of the aspirations of the vision to transform Rwanda into an information-rich, knowledge-based society and economy by 2020.

## 1.0 BACKGROUND ON THE RWANDAN ICT FOR DEVELOPMENT (ICT4D) PROCESS

### 1.1 Introduction

The Rwandan ICT for Development (ICT4D) or NICI process began in 1998 under the auspices of the African Information Society Initiative (AISI) of the United Nations Economic Commission for Africa (UNECA). The process is designed to put in place and implement the necessary policies and plans capable of addressing Rwanda's developmental challenges in the information and technology age, to accelerate the country's socio-economic development process, and to move it towards an information-rich, knowledge-based economy and society.

As part of this process, the Government put in place an ICT4D (ICT-led Socio-Economic Development) Policy in 2000 and followed this up with the development and implementation of the NICI-2005 Plan, the first of the envisaged four rolling plans to be developed and implemented within the 20-year time frame of the *Vision 2020*, which coincides with the time frame of the ICT4D Policy.

### 1.2 The Rwandan ICT4D Policy

The Government of Rwanda (GOR) recognized the role that ICTs can play in accelerating the socio-economic development of Rwanda towards an information-rich and knowledge-based economy. On the basis of this acknowledgment, the Government committed itself to the implementation of a number of key policy items and initiatives aimed at facilitating and accelerating development, deployment and exploitation of ICTs within the economy and the society. The key areas of policy include:

- Policy on creating and facilitating an enabling environment for the development of the national information society and economy;
- Policy on human resource development and deployment to support the development of the country's information society and economy;
- Policy to facilitate the deployment and exploitation of ICTs in the educational system;
- Policy on the deployment of ICTs to support the operations of the civil and public services;
- Policy on facilitating an investment climate for the mobilization of financial and technological resources;
- Policy to encourage and facilitate physical infrastructure development;
- Policy on the development of standards, best practices and guidelines to guide the deployment, exploitation and development of ICTs;
- Policy on creating the necessary enabling regulatory framework for facilitating the deployment, exploitation and development of ICT products, services and systems;
- Policy on the enactment of the necessary cyber laws and legislative provisions;
- Policy on setting up of national ICT structures and bodies;
- Policy to facilitate and promote the implementation of national ICT applications;
- Policy to engender national information and communication programs;
- Policy on implementing special tax packages, instruments and incentive programs to promote the development of the information economy;
- Policy on promoting universal access to information and communication technologies and systems;
- Policy on the development of a local ICT industry;
- Policy initiatives to facilitate the private sector's role in the development and participation in the information economy;
- Policy on the promotion and support of research and development (R&D) initiatives directed at the

development and exploitation of the opportunities of the information society and economy;

- Policy on involving key national stakeholders and civil society in the process.

### 1.3 The Vision and Mission Statements

The details of the Government's policy commitments as contained in the ICT4D Policy document were based on the need to achieve the aspirations of the *Vision 2020* aimed at developing Rwanda into a middle-income country by 2020. The ICT-led development Vision, aimed at achieving the aspirations of the *Vision 2020*, to improve the quality of life of the people of Rwanda by enriching their social, economic and cultural well-being through the modernization of the economy and society. The main mission, sub-missions and the corresponding broad strategies for achieving the mission, are:

#### Main Mission

To achieve a middle income status for Rwanda by 2020 and transform its society and economy into an information-rich, knowledge-based society and economy by modernizing its key sectors using information and communication technologies.

#### Sub-Missions

- To develop an ICT industry for Rwanda
- To develop a highly competitive, value-added services sector with the potential to develop into a business-hub of the region
- To promote social and cultural interaction and integration at all levels of the Rwandan society

#### Strategies for Achieving Stated Missions

- To transform Rwanda into an IT-literate nation
- To promote and encourage the deployment and utilization of ICTs within the economy and society
- To improve the civil and public service efficiency
- To improve the information and communications infrastructure of Rwanda
- To transform the educational system using ICTs with the aim of improving accessibility, quality and relevance to the developmental needs of Rwanda
- To improve Rwanda's human resource development capacity to meet the changing demands of the economy
- To develop the legal, institutional and regulatory framework and structures required to support the deployment and utilization of ICTs within the economy and society

- To facilitate the process of national reconciliation and reintegration by promoting social and cultural interaction within society

#### 1.4 The Ultimate Goal: To Develop the Rwandan Information and Knowledge Economy (IKE)

The ultimate goal of the Rwandan ICT4D policy and process as per the ICT-led Socio-economic Development Vision is to transform Rwanda into an information-rich, knowledge-based society and economy by modernizing its key sectors using information and communication technologies. To this end, the Government committed itself to developing and implementing ICT4D policies and action plans within the context of the Vision for Rwanda to transform Rwanda's predominantly agricultural economy by the year 2020 into:

- A high-income economy dominated by trading in ICT products and services
- An economy characterized by a large commercial services sector with a reasonably large and vibrant ICT services sub-sector and industry
- An economy characterized by a technology-based and knowledge-driven industrial sector
- An economy with a globally competitive industrial and services sector which is, to a large extent, driven by cutting-edge R&D activities
- An economy based on a rich pool of highly skilled human resources in critical skill areas relevant for developing and maintaining a competitive edge on the global market
- An economy in which the majority of the working population is either directly or indirectly involved in information and communications related activities
- An economy with a modern, efficient and competitive agricultural sector
- An economy characterized by a widespread deployment and exploitation of ICTs within the society to support the delivery of health, education, government and social services
- An economy characterized by a modern educational system within which ICTs are widely deployed to facilitate the delivery of educational services
- An economy in which a reasonably large portion of the population has access to information and communications technology products and services
- An economy in which the provision and delivery of goods and services of its key sectors are to a large extent facilitated by information and communications technologies

- An economy in which the provision and delivery of services by Government and its administrative machinery are to a large extent facilitated by information and communications technologies
- An economy based on an advanced and reliable national information and communications infrastructure
- An economy based on a literate society with a high proportion of computer-literate people.

#### 1.5 Profile of the NICI/ICT4D Plans

The Government, as part of its policy goal to progressively transform Rwanda from a predominantly agriculture economy (PAE) to a predominantly information-rich, knowledge-based economy (PIKE), committed itself to the implementation of the envisaged four rolling NICI/ICT4D Plans over the 20 year life-span of *Vision 2020* and the ICT4D Policy. The goal of each of these rolling NICI Plans is as follows:

##### The 1st NICI Plan (2001 to 2005): (NICI-2005)

Goal: To support the development of an economic base and environment for accelerated growth and development towards transforming Rwanda into an information-rich, knowledge-based society and economy.

##### The 2nd NICI Plan (2006 to 2010): (NICI-2010)

Goal: To support the strengthening of the economic base and improve the economic environment to accelerate development and growth towards achieving an information-rich, knowledge-based society and economy.

##### The 3rd NICI Plan (2011 to 2015): (NICI-2015)

Goal: To facilitate the process of sustaining economic development and growth towards improving national prosperity and global competitiveness.

##### The 4th NICI Plan (2016 to 2020): (NICI-2020)

Goal: To consolidate the process towards achieving a middle-income status and an information-rich, knowledge-based society and economy.

It is envisaged that the first and second NICI Plans – with the goal of supporting and strengthening the process of developing an economic base and environment for accelerated economic development and growth – shall be based on all the eight strategies identified for achieving the stated mission of the Vision for Rwanda.

The third and fourth NICI Plans are to be based on only some of the key strategies.

#### 1.6 Policy Commitment to the Exploitation and Development of ICTs

The Government – mindful of the fact that Rwanda's capability and ability to accelerate its socio-economic development process and gain competitive advantage depends a great deal on the extent to which it can develop, use and sell information, knowledge and technology in one form or another – is committed to pursuing policy goals oriented towards both the exploitation and production of ICTs. Emphasis of the Government's ICT4D Policy is therefore being placed on the exploitation of ICTs to support the delivery of government services and the activities of various sectors of the economy for a number of years and then switching the emphasis to the production, development and delivery of ICT products and services, i.e. towards the development and promotion of an ICT industry.

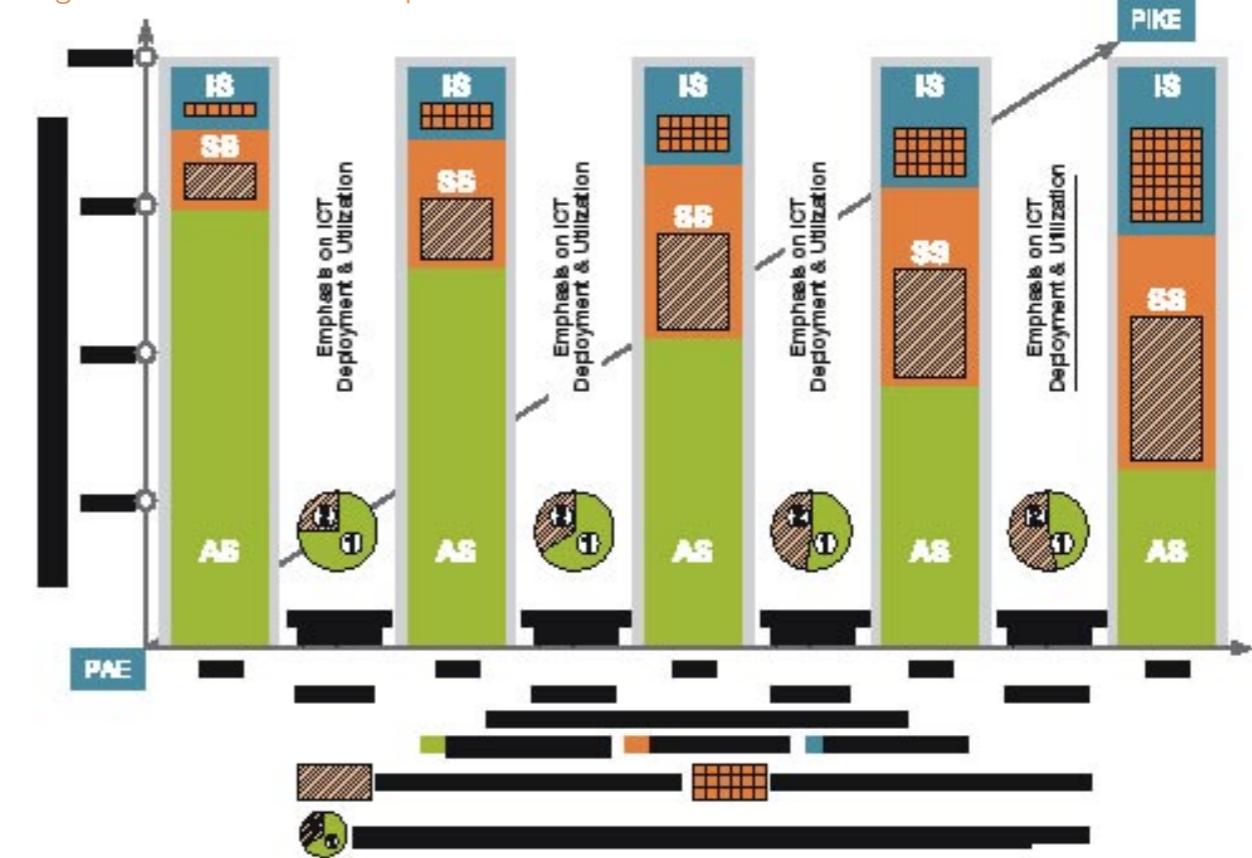
Based on this adopted policy orientation, the Government committed itself to the implementation of the ICT-2020 Policy Framework (see below) within the context of the implementation of the broad socio-economic development objectives of the government within the *Vision 2020* time frame.

#### The ICT-2020 Policy Framework

1. Rwanda is committed to pursuing both ICT exploitation and production policy to support the delivery of government services and the activities of various sectors of the economy, as well as the production, development and delivery of ICT products and services, i.e. towards the development and promotion of an ICT industry.
2. The Government is committed to implementing this policy framework over a period of 20 years up to 2020 through the implementation of four five-yearly NICI/ICT4D Plans with the first, second and third NICI Plans laying emphasis on the exploitation of ICTs to support the delivery of government services and the activities of various sectors of the economy, and the fourth NICI Plan laying emphasis on the production, development and delivery of ICT products and services.

The Government envisages that implementation of the ICT-2020 policy framework through specific programs and initiatives of the various rolling NICI/ICT4D plans over the 20-year time span of *Vision 2020* will enable Rwanda to progressively reduce the contribution of the agricultural sector to the economy whilst increasing the contribution of services and the industrial sector as the country transforms its economy from PAE to PIKE, as illustrated below.

Figure 1: Economic Development Timeline



As a key policy goal, as Rwanda moves from PAE to assume the status of a PIKE nation, it is expected that the role of the agriculture sector as a major contributor to the economy will reduce from the 2000 level of approximately 75% to about 60% by 2005, and to approximately 50% by 2015. This is expected to further reduce to less than 40% by 2020.

On the other hand, it is expected that the contribution of the targeted lead sectors of the economy – the services sector and the industrial sector – will increase marginally at first and then substantially during the second half of the ICT-2020 policy time frame. By 2020, it is envisaged that the combined contribution of the targeted lead sectors to the economy will be close to 60% or more.

More importantly, it is envisaged that the contribution of the ICT sub-sectors of the service sector and the industrial sector (i.e. the ICT-production sub-sector) will increase dramatically over the implementation period of the four NICI plans spanning the ICT-2020 time frame. Specifically, the ICT-production sub-sector, which in 2000 is estimated to account for about 10% of the economic contribution of the industrial sector, is expected to increase to about 80% of the industrial

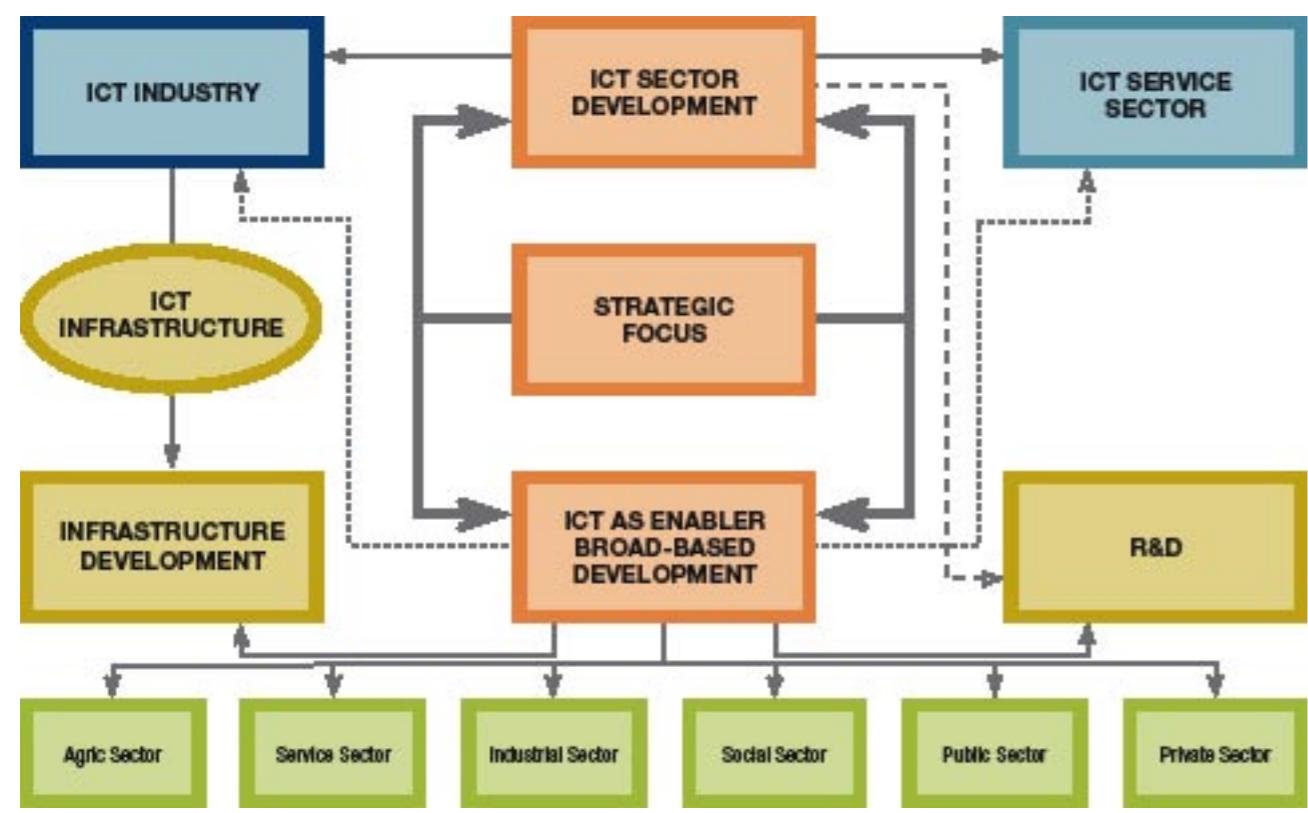
sector's contribution to the economy by 2020. Also, the size of the contribution of the ICT services sub-sector of the service sector is expected to increase from about 10% in 2000 to about 75% by 2020.

The rapid expansion of the ICT sub-sectors of the service and the industrial sectors as the targeted lead sectors is crucial for the attainment of the PIKE status by 2020.

Also, as Rwanda moves from PAE to PIKE within the ICT-2020 policy framework, it is envisaged that the emphasis on the exploitation of ICTs to support the delivery of government services and the activities of various sectors of the economy within the first, second and third NICI Plans will result in a widespread deployment, exploitation and utilization of ICTs throughout the economy and society by 2015.

Emphasis could then be shifted to the production, development and delivery of ICT products and services within the fourth NICI Plan to boost the ICT production sector and the entire ICT industry. In turn, this will have a spill-over effect on other sectors – in particular the industrial and services sub-sectors – and speed up the process towards achieving a PIKE status by 2020.

**Figure 2: The Dual Focus of the NICI process**



### The Dual Focus of the Rwandan ICT4/NICI Process

The Rwandan ICT4D process is strategically focused on both the development of the local ICT industry targeted at the export market as well as on using ICTs as an enabler for attaining Rwanda's broad developmental goals.

In other words, being an under-developed nation, the dual focus of Rwanda's ICT4D process is driven by the need to use ICTs as a broad enabler of its socio-economic development process as well as putting in place policies and programs to develop its ICT sector and industry.

The argument is that the spill-over or catalytic effect on the economy of developing the ICT sector as a whole will

<i>The Ultimate Goal</i>	To engineer an ICT-led socio-economic development process with the potential to transform Rwanda into a middle-income, information-rich, knowledge-based and technology-driven economy and society
<i>The Objective</i>	To develop for implementation within the 20 year time frame of the <i>Vision 2020</i> an ICT4D Policy and corresponding ICT4D/NICI rolling plans set within the wider socio-economic development framework of Rwanda
<i>The General Question Being Addressed</i>	How to address Rwanda's developmental challenges and accelerate the nation's socio-economic development process to improve the people's socio-economic well-being
<i>The Basic Premise</i>	Rwanda's development process can be accelerated through the development, deployment and exploitation of ICTs within the economy and society
<i>The Basic Motivation</i>	Rwanda's accelerated development within the emerging information and digital age will not be possible without an ICT-enabled development agenda
<i>Key Process Outputs</i>	<ul style="list-style-type: none"> <li>• The Framework</li> <li>• The ICT4D Policy (based on a Framework)</li> <li>• A Number of Rolling (ICT4D/NICI) Plans</li> <li>• Implementation Structures and Institutions</li> </ul>
<i>Key Drivers (Policy &amp; Plans)</i>	<ul style="list-style-type: none"> <li>• ICT as a social enabler (education, health, poverty-reduction, income-distribution, etc);</li> <li>• ICT as an enabler of rapid economic development;</li> <li>• ICT as an enabler of Government, administration and service delivery;</li> <li>• ICT as an engine of the service sector;</li> <li>• ICT as an enabler of industrial development;</li> <li>• ICT as an enabler of the agriculture sector;</li> <li>• ICT as a driver of private sector development; and</li> <li>• ICT as an agent for wealth creation.</li> </ul>

### The Expectations of the Process

The expectations of the Rwandan ICT4D process are that, as part of facilitating the development of the Rwandan information economy and society, it will, among other things, address issues relating to the:

not be enough to accelerate Rwanda's socio-economic development process. It is envisaged that a simultaneous focus on developing the ICT industry whilst using ICTs to drive other sectors of the economy can accelerate Rwanda's development more rapidly and spread the social and economic impact of the development, deployment and exploitation of ICTs much faster than a singular focus of the development of the ICT sector.

### 1.7 Conclusion on the Rwandan ICT4D Process

The underlying details of the Rwandan ICT-led socio-economic development process, which is driven by the Government's policy commitment in the ICT4D Policy document, are summarized below.

- creation of the necessary enabling environment to facilitate the deployment, utilization and exploitation of ICTs within the economy and society
- development of a local ICT industry to facilitate the production, manufacture, development, delivery, and distribution of ICT products and services

- development of the national human resource capacity to meet the changing demands of the economy
- development of the national information and communications infrastructure
- development and implementation of e-Government and e-Governance, as well as e-Commerce strategies and action plans
- development of the legal, institutional and regulatory framework and structures required to support the deployment, utilization and development of ICTs within the economy and society
- development and promotion of the necessary standards practices and guidelines to support the deployment and exploitation of ICTs within the society and economy

## 2.0 AN ANALYSIS AND REVIEW OF THE SOCIO-ECONOMIC DEVELOPMENT IMPACT OF THE NICI-2005 PLAN IMPLEMENTATION

### 2.1 Introduction

To provide the basis for the development of the NICI-2010 plan, we review in this section the impact of the implementation of the NICI-2005 Plan in terms of its achievements and lessons. More particularly, we provide an analysis of the extent to which the implementation

of the plan has moved Rwanda towards the realization of the goal: *to achieve for Rwanda a middle income status by 2020 and transform its society and economy into an information-rich, knowledge-based society and economy by modernizing its key sectors using ICTs.*

### 2.2 Documenting Rwanda's Socio-Economic Status at the Start of the Process

To carry-out effectively an analysis of the socio-economic impact of the implementation of the NICI-2005 Plan and evaluate its role with respect to developing the Rwandan information society and economy, it is imperative that we document Rwanda's socio-economic status at the start of the ICT4D process in 1998 through the use of a number of key economic and social indicators, as well as ICT deployment and utilization indicators.

#### 2.2.1 Documenting the Status of Rwanda's Basic Socio-Economic Indicators at the Start of Process – the Implementation of the NICI-2005 Plan

**Population and Demographic Indicators**  
Rwanda's population at the start of its ICT4D process in 1998 was estimated at 7.9 million (2000) with the majority (94%) living in rural areas (this figure at the time compares with 68% the average for Sub-Saharan

Africa as a whole). Rwanda, with an urban population of 6% in 2000 (compared to Zimbabwe (33%), Uganda (13%), South Africa (50%), and Botswana (65%)) was in fact (and still is) the least urbanized country in Africa. It is therefore a predominantly rural-based country with the majority of those living in urban areas based in Kigali (about 5.8% of the total population).

The country's population at the start of the process was, and still is, relatively young with a high proportion of the population (60%) under the age of 20. Women constitute the majority of the population (about 54%) and its labor force, particularly in agriculture.

Rwanda, then as now, still has the highest population density in Africa. In 1997 this was estimated at 273 people per square kilometer. The corresponding figures for some selected African countries were: Zimbabwe (29), South Africa (33), Uganda (99) and Burundi (245). The annual population growth rate for Rwanda in 2000 was estimated at 3.6%, compared to 2.9% for Zimbabwe, 2.3% for South Africa, 2.7% for Uganda and 2.6% for Burundi. The crude birth rate was 43.3 per 1000 people. Rwanda was therefore regarded as having a relatively high population growth rate and a high crude birth rate.

#### The Economy

Rwanda's economy at the start of the process was, and still is, predominantly subsistence agriculture based, with about 91.1% of the working population (compared to 70% for Sub-Saharan Africa (SSA) actively involved in the Agricultural sector. Only 1.7% (7.5% for SSA) of the working population is in the industrial sector with 7.2% (22.5% for SSA) in the services sector of the economy.

The GDP of Rwanda in 1998 was estimated at US\$1.9 billion compared to the public debt of US\$1.4 billion (75% of GDP). The per capita GDP in 1997 was US\$198. In 1998, the percentage contribution of the key sectors of the economy to GDP were: agriculture (45%), industry (19%), commerce and services (26%), others (10%). These figures confirm that Rwanda's economy was, and still is, predominantly agriculture-based. Agriculture production is far from being commercialized or industrialized – for example, agro-business is not yet developed in Rwanda.

Rwanda depends on coffee and tea for most of its export earnings. For example, the export earnings for 1998 were estimated at US\$64.4 million. Of this, the highest

contributor was coffee (US\$25.9 million) followed by tea (US\$22.9 million). On the whole, in 1998, coffee contributed 49% and tea 44% of the total export earnings. The country's total export as a percentage of GDP is very low. In 1998, the figure was estimated at 5.6% of GDP and most of this is made up of agricultural products (cash crops).

#### Agricultural Sector

The agricultural production system in Rwanda at the start of the process was, and still is, mainly based on small family farms (subsistence farming) producing mainly for own-consumption (about 80%), thus leaving very little for the market. The majority of the subsistence farmers produce traditional food crops like bananas (63%), sweet potatoes (18%), cassava (5%) and others (14%).

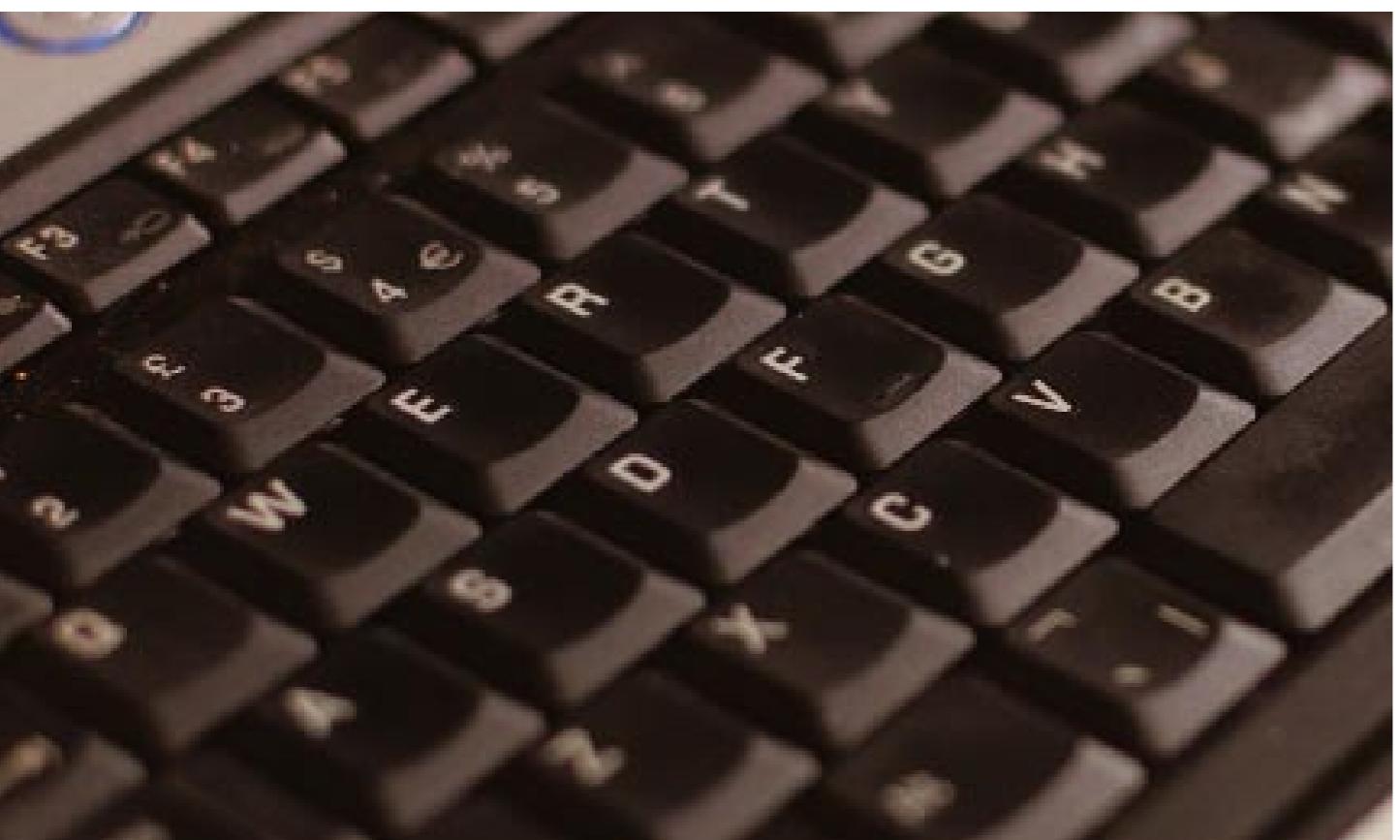
Agricultural production in Rwanda is far from being mechanized. For example, the number of tractors used per hundred hectares of arable land between 1994 and 1996 was estimated at one, with the corresponding figures for USA (837), Uganda (9), Tanzania (23), South Africa (87), Kenya (35) and Burundi (2). The hilly nature of the country may be one of the reasons for the low level of mechanized agriculture in Rwanda. Another reason could also be the small size of the farms with little commercial farming activity going on.

Irrigated land as a percentage of crop land between 1994 and 1996 was estimated at 0.3% with the corresponding figures for Zimbabwe (4.6%), South Africa (8.1%) and India (32%). Fertilizer consumption in hundreds of grams per hectare of arable land (1994-1997) was estimated at one, in comparison to Zimbabwe (554), Tanzania (113), Kenya (278), and Burundi (61).

#### The Modern Industrial Sector

At the start of the process, Rwanda's modern industrial sector was under-developed and the situation is not different today. The sector depends largely on external supplies for raw materials. In 1998, for example, industry contributed about 19% of GDP and provided employment to about only 10,000 people. The breakdown of the GDP contribution was: mining (0.1%), manufacturing (12.6%), electricity and water (0.5%), and construction (6%).

Rwanda's industry at the start of the process was (and still is to a large extent) handicapped by: the high cost of factors of production and of imported equipment; the inadequacy and shortage of infrastructure



and qualified and experienced human resources; the absence of information on existing opportunities and potentialities; inadequacy of a national framework and institutional mechanism for promotional activities; lack of a promotional structure and mechanism for exports; and low internal financing capacity and lack of entrepreneurship.

#### The Cottage Industry

The Rwandan cottage industry at the start of the process was, and still is, made up of three main sub-sectors: (i) production-oriented cottage industry involved in making finished products from local or imported materials; (ii) art-based cottage industry involved in making handicrafts and other art and heritage products, from local resources mainly; and (iii) service-based cottage industry which comprises all trades dealing in installation, repair and maintenance of household, industrial, commercial, office and agricultural equipment, and so on.

The cottage industry sector is one of the most significant sources of employment after agriculture. At the start of the process, the sector provided full-time employment to about 102,000 people and part-time occupation to

about 850,000 people. This sector therefore employed many more people than the modern industrial sector at the time.

The main problems facing this sector were then identified as: difficulty in getting equipment and raw material supplies; insufficient training and information for artisans, institutional and bureaucratic constraints, insufficient local expertise, and lack of enterprising spirit; lack of financial resources and access to bank credits; and difficulties with selling of products.

#### Service and Commerce Sector

At the start of the process in 1998, Rwanda's service and commerce sector was the second largest (after agriculture), contributing 26% of GDP compared to 45% for agriculture. This situation has not changed much.

The main activities in the service and commerce sector (as was the case at the start of the process) still include: wholesale and retail trade; hotel and other hospitality services; transport, storage and communications services; financial, banking and insurance services; and public administration and NGO services. The sector

also involves the activities of informal self-employed operators such as the retail traders, repair shop owners, food service providers, furniture makers, metal workers, and so on.

#### 2.2.2 Documenting Rwanda's Status of Key Socio-Economic Indicators at the End of the Implementation of the NICI-2005 Plan

Details relating to the status of Rwanda's key socio-economic indicators at the end of 2005 can be summarized as follows:

The population of Rwanda is currently estimated to be 8.8<sup>1</sup> million. The majority of the population, estimated at 94%, lives in rural areas, while the rest live in urban centers, mostly in Kigali. About 60% of the population is under 20 years old. The employed population is about 3.4 million, of which 75% is self-employed. Agriculture and Forestry employ about 87% of the workforce.

The GDP for 2005 is estimated to be US\$2,146.4 billion and the GDP per capita is US\$262. The contribution of key sectors of the economy includes:

- 43.09% (2005) for agriculture
- 19.23% (2005) for industry
- 37.68% (2005) for services

Commercial agriculture and agri-business is limited. Export earnings are mainly derived from coffee and tea with a combined value of about US\$62.7 million or about 50%.

The majority of the subsistence farmers produce food crops such as<sup>2</sup>:

- Bananas and Fruit 49.2%
- Roots & Tubes (potatoes, cassava, etc.) 40.9%
- Cereals (sorghum, maize, wheat, etc.) 8.4%
- Others 1.4%

The industrial sector is small constituting 19.23% of GDP with contributions from:

- Manufacturing 45.67%
- Construction 51.38%
- Mining 1.61%

Small scale (micro, small and medium scale), informal and formal enterprises are the biggest employers in the economy. It is estimated that about 2.5 million or 75% of the working force is engaged in this sector. The Service and Commercial Sector is the second biggest in the economy contributing about 37.68% of the GDP. Main activities include wholesale and retail trade, hotel and other hospitality, transport, storage and communication services, financial, banking and insurance services.

**Table 1: Key Demographic and Economic Indicators**

1	Population Total Million (MN) 2005	8.8
2	Gross Domestic Product US\$ Billion 2005	2.146
3	GDP per Capita US\$ 2005	262
4	Agriculture by Value US\$ MN 2005	548.4
5	Industry by Value US\$ MN 2005	245
6	Services by Value US\$ MN 2005	481.3
7	Foreign Direct Investment US\$ MN Net Inflows 2005	448
8	Gross Fixed Capital Formation % GDP 2005	21.4%
9	Agriculture Contribution to GDP % 2005	43.09%
10	Industry Contribution to GDP % 2005	19.23%
11	Services Contribution to GDP % 2005	37.68%

Source: Ministry of Finance and Planning, Annual Economic Report 2005

<sup>1</sup> MINECOFIN projection based on 2.5% growth rate applied to 2002 population census of 8.2 million

<sup>2</sup> MINECOFIN Annual Economic Report 2005 and preliminary Budget Framework for 2007

### 2.2.3 A Comparative Analysis of some Important Economic Indicators

In Table 2 below we present a comparative analysis of

the key indicators to measure Rwanda's performance in terms of the impact of the implementation of the NICI-2005 Plan on these key indicators.

**Table 2: Comparison of Rwanda's Demographic and Economic Indicators**

Key Demographic and Economic Indicators	At Start of the NICI-2005 Plan (1999)	At Completion of the NICI-2005 Plan (2005)
Population (Total)	7.7 million	8.8 million
Gross Domestic Product (GDP)	US\$ 1.93 billion	US\$ 2.146 billion
GDP per Capita	US\$ 246	US\$ 262
Foreign direct investment, net inflows (BoP, current US\$)	US\$ 1.726 million	US\$ 448 million
Gross Capital Formation (%GDP)	17.2%	21.4%
Percent Contribution to GDP (Agriculture)	45%	43.09%
Percent Contribution to GDP (Industry)	19%	19.23%
Percent Contribution to GDP (Services)	26%	37.68%

Source: World Development Indicators (2005), Ministry of Finance and Economic Planning

Taking a few examples, Rwanda's GDP, which at the start of the process was US\$1.93 billion, increased to US\$2.146 billion in 2005 representing a percentage increase of about 21.6%. The percentage contribution of agriculture to GDP reduced from 45% (1998) to 43.09% (2005) as an indication that the Rwanda economy is modernizing.

This is confirmed by the fact that the percentage contribution of industry to GDP increased from 19% (1999) to 19.23% (2005) with the contribution of the services sector to GDP improving from 26% (1998) to 37.68% (2005). Also, Rwanda's FDI figures improved dramatically from US\$1.726 million in 1999 to US\$448 million in 2005.

### Social Indicators

Poverty, which was widespread in Rwanda at the start of the process, is still rampant today. In 1998, for example, about 64% of the population was estimated to live below the poverty line. Life expectancy in 1998 was estimated at 49 years and infant mortality for the same year was at 129 for every 1000 live births. The corresponding figures for Sub-Saharan Africa were: 54 and 91 respectively.

However, Rwanda's access to basic health care is relatively good. According to the Rwanda Development Indicators (published in 1999), about 87% of the population were within 2 hours of walking distance of a health center in 1996.

### The Educational System

At the start of the process, Rwanda had a high illiteracy rate (and this is still the case). According to the Socio-demographic survey of 1997, the rate was then estimated at 52% for men and 45% for women. Comparatively, the corresponding male illiteracy rate for Uganda was 16%, South Africa 10%, and Burundi 36%. The corresponding rates for women were: for Uganda (31%), South Africa (10%) and Burundi (43%). In 1997, the youth illiteracy rate in Rwanda as percentage of total population in the age group of 15-24 was: 16% (men) and 21% (women).

The gross primary school enrolment rate in 1997/98 according to the Rwanda Development Indicators (1999) was 89% and this compares favorably with the rest of Sub-Saharan Africa. But on the whole, the quality of education in Rwanda is regarded as low, the drop-out rate high (with only 24% of children finishing in 1998 having completed the full 6 years of primary school) and only about 46% of the primary school teachers qualified as per 1998 data. The enrolment in secondary school is very low, with a rate of 7% in 1998 and only about 31% of the secondary school teachers being qualified as per 1998 figures.

### Human Resources

Rwanda's human resource base at the start of the process was very weak across all the key sectors of the economy. The situation has improved considerably since then.

### 2.2.4 Documenting the Status of the Rwanda ICT Sector at the Start of the Process

#### Telecommunication Infrastructure and Services

At the start of the NICI/ICT4D process, Rwanda had two telecommunications service providers: Rwandatel (99.9 % government-owned at the time) was the national fixed telecommunication service provider, and Rwandacell (partly government-owned at the time), was the first cellular provider operating a GSM mobile network. Rwandatel was also the sole Internet service provider in Rwanda at the time.

Rwanda had a total of about 8,000 telephone lines before the 1994 war, but had most of its telecommunications infrastructure destroyed during war. The infrastructure was rehabilitated and expanded, resulting in an installed capacity by 1998 of about 20,000 lines with equipment capacity of 26,000. By 2000, at the start of the process, the telecommunications infrastructure was being digitized and an ambitious rural telecommunication connectivity program was then under way. New technologies were deployed including Network Digitization Systems, Pairgain Technology, Smart Card Payphones, and Wireless Local Loop Systems. The deployment of other modern services and new technologies were also planned at the start of the process and these include ATM, video conferencing, ISDN, LEO, and satellite broadcasts.

#### ICT Level, Penetration and Utilization

The penetration of computers within the formal private sector was fairly high at the start of the implementation of the NICI-2005 Plan in 2001. All the Banks were computerized and most of the large private sector organizations were then using computers to support some of their activities. A number of the NGOs (in particular the international ones) and the International Agencies operating in Rwanda at the time were also then reasonably computerized. On the other hand, most of the government Ministries and public service organizations (PSOs) were not fully computerized at the start of the process.

As part of a survey carried out in 1999 by the National Y2K Committee, the total number of PCs in the 43 public service institutions surveyed was estimated at 1,264. This gives an average of about only 29 computers per Government Ministry or PSO. Of the surveyed establishments, the Kigali Institute for Science and

Technology (KIST) then had the highest number of 137 PCs, followed by the Ministry of Defense with 130 PCs and then the Ministry of Local Government with 122 machines.

The computer systems in most of the organizations in the civil and public service at the start of the process were not networked. In other words, the vast majority of the Government Ministries and PSOs did not have their corporate/organizational networks at the start of the process. Also, there was no inter-networked computer systems linking the Government Ministries and PSOs, and as such, there was no electronic interchange of information between the computer systems of the various Ministries and PSOs at the time.

Although the level of penetration of computers within the civil and public service was reasonably high at the time of the start of the implementation of the NICI-2005 Plan, the level of utilization of computers to support organizational activities and operations was very low. In most cases, computers were being used for basic computing work like word-processing. Not many of these organizations were utilizing their computer



systems for implementing high-end, value-added applications like information management (MIS, DSS), databases, personnel management systems, accounting, budgeting, and so on.

In the area of computer related services, at the start of the process, there were a number of computer hardware vendors in Rwanda, most of them being distributors or agents of computer companies operating outside

Rwanda. They were mainly involved in the sale of computers assembled outside the country. In other words, no company was assembling computers locally at the start of the process, save for KIST which had started assembling PCs on a small scale for use by the institution.

The table below provides details of key baseline data in relation to some ICT deployment indicators at the start of the NICI-2005 Plan process.

**Table 3: Some ICT Indicators (1995-2000)**

YEAR	1995	1996	1997	1998	1999	2000
Telephone lines	6,900	15,000	15,000	10,800	12,700	17,568
Teledensity	0.29	0.28	0.28	0.16	0.17	0.23
Public telephones				360	400	400
Mobile subscribers				15,000	11,000	39,000
Telecommunications revenue (MN US\$)				8.6	18	17.6
Internet service providers (ISPs)				1	1	2
Internet subscribers				100	100	1400
Internet users					1,000	5,000
Internet bandwidth (Kbps)				128	128	256

#### The Level of Internet Connectivity and Spread

Rwadatel, the public telecom service provider, was the only ISP in Rwanda at the start of the process. At the time, it was operating a 256kpbs gateway link to the Internet and had a point of presence (POP) server in Kigali where the majority of its subscribers (most using dial-up access) reside. The use of the Internet then was not widespread outside Kigali.

Within the civil and public service, not many organizations were connected to the Internet. Even in the cases of the connected government Ministries, access was mainly by dial-up and in most cases, only one or two offices were connected to the Internet within the entire organization. In very few cases (perhaps none), was the Internet then used to support the organizational activities of these organizations. The main use of the Internet at the time was largely for e-mail and occasional Web browsing. A number of business organizations in the private sector, including the banks, were at the start of the process connected to the Internet mainly by dial-up access. A fair number of organizations in the NGO, diplomatic and the international agency communities were then connected to the Internet.

#### The Local ICT Production Industry

At the start of the process, most of the ICT equipment used in Rwanda, including telecommunications equipment, radio and TV equipment, and communication equipment such as fax machines as well as computer hardware, were imported. There was no local assembling of computers. Some of the ICT vendors provided equipment maintenance and repair services on contract. There was no active local industry for computer hardware servicing or repair.

Also, there was very little local computer software development going on in Rwanda. Most of the organizations in the private and public sectors were using mainly off-the-shelf software. Some of the little software development work being done at the time was carried out using expertise mainly from outside the country with very little local input.

On the whole, before the development and the implementation of the NICI-2005 Plan, there were no existing specific government policies targeted at the development of the ICT sector to encourage the local production and development of ICT products, tools and services.

#### ICT Human Resource Development

At the start of the process, even by African standards, Rwanda was facing a serious shortage of skilled ICT manpower in all sectors. On the whole there was a serious lack of computer systems development, implementation and maintenance skills by 2000/2001. The key areas of hardware, software and computer network systems development and installation, were equally affected. The NICI-2005 Plan, which contained specific programs and initiatives targeted at the development of ICT skills and manpower, and policies in the area of development of local ICT skills, forms part of the overall government plan for the development of human resource capacity for the country.

#### Information and Mass Media Sector

Rwanda, at the start of the process, had only one national TV network, and one national radio service. These were both run by the government-owned Rwanda Office of Information (ORINFOR). There were, therefore, no private TV or radio stations. Private radio stations are now licensed to operate in Rwanda but there are still no private TV stations.

In the area of the print media, there were no daily papers in Rwanda at the start of the process. There were a number of weekly papers in Kinyarwanda, French and English – the three official languages of Rwanda. Some of these papers were privately owned. Currently, there is one daily paper in Rwanda, and a number of the previously weekly papers are now being published a

number of times in the week, and could soon become daily.

### 2.3 A Review of the Outcome of the Implementation of the Programs and the Initiatives of the NICI-2005 Plan

In this section we provide a brief review of the outcome of the implementation of the various components of the NICI-2005 Plan by the designated implementation agencies, which included all the Government Ministries, Public Sector Organizations (PSOs) including the Parliament, the State Enterprises, the universities, and colleges, among others.

Also included as implementation agencies are specific private sector entities, and establishments including the banks, telecommunications and communication service providers, among others.

#### 2.3.1 Summary of the Implementation of the Programs and Initiatives of the NICI-2005 Plan

On the whole, the NICI-2005 Plan had a total of 59 programs and initiatives, which translated into 265 plan-specific actions and 419 time-bound measurable (TBM) targets.

The breakdown for each of the sub-plans of the Plan is provided in Table 4 below. Briefly, the sub-plan *ICTs in Education* had the largest number of plan-specific actions and corresponding time-bound measurable targets.

**Table 4: Components of the NICI-2005 Plan, Summary Statistics**

SUB-PLAN	Programs and Initiatives	Plan-Specific Actions	Time Bound Measurable Targets
HRD – Human Resource Development	13	41	71
EDUC – ICTs in Education	11	52	85
GOV – e-Government	8	39	55
PRS – Private Sector Development	9	42	53
CMN – Community Access	6	34	74
IFR – Infrastructure	3	14	23
LRI – Legal, Regulatory and Institutional Provisions	4	21	24
FDI – Foreign Direct Investment	5	22	24
<b>Total</b>	<b>59</b>	<b>265</b>	<b>419</b>

On the whole, the level of the implementation of the NICI-2005 Plan varied from one implementation agency to another. Close to 40 implementation agencies were identified within the NICI-2005 Plan and each of these were designated to implement a number of programs

and initiatives. In a number of cases, more than one implementation agency was assigned to implement a particular plan-specific action of a given program. For example, the majority of the programs and the initiatives in the *Facilitating Government Administration and Ser-*

vice Delivery Sub-plan were designed to be implemented individually by the Government Ministries and PSOs.

Given that the actual implementation of the NICI-2005 Plan did not start early due to logistical and resources constraints, and challenges and problems related to the fact that the entire implementation process and modalities were new to the implementation agencies, the performance on the whole has been satisfactory. A high proportion of the programs and initiatives of each of the sub-plans has been implemented, with a number of them slated as work-in-progress.

Of the eight sub-plans, progress has been made in implementing the key programs and initiatives of more than half of them. In particular, key plan-specific actions and the corresponding TBMs of the majority of the programs and the initiatives of most of the sub-plans have either been completed or are work-in-progress. Sub-plans like *ICTs in Education*, *Facilitating Government Administration and Service Delivery*, *ICT Infrastructure Development* and *Human Resource Development* have had a fair amount of their plan-specific actions implemented or are being implemented.

Turning now to the performance of each of the agencies in implementing their designated programs and initiatives in terms of the corresponding TBMs of the Plan, on average, they have either completed or are in the process of implementing (work-in-progress) close to 50% of the TBMs. Given that the actual implementation of the plan did not start in earnest until about the middle of 2002, this performance on the part of the implementing agencies is more than satisfactory. The majority of the TBMs that are classified as “work-in-progress” are at an advanced stage with a number of them near completion.

As expected, at the start of the implementation of the NICI-2005 Plan, a number of the “work-in-progress” and “not-implemented” programs and initiatives are being rolled over to the NICI-2010 Plan.

### **2.3.2 Documenting the NICI-2005 Plan Implementation Challenges and Lessons**

The implementation of the NICI-2005 Plan was not without challenges. The key ones that the implementation agencies noted under four broad headings include: resource mobilization challenges; expertise availability challenges; plan implementation support and coordination challenges; among others. We consider each of these below.

#### **Resource Mobilization Challenges**

A number of the implementation agencies listed lack of funds, difficulty in mobilizing funds, and lack of technical resources for implementing their respective programs and initiatives as key resource mobilization challenges that they faced during the implementation of the NICI-2005 Plan. As per the provisions of the Plan, in addition to mobilizing funds and resources to implement its major programs and initiatives, each implementing agency, depending on its size and operations, was to set aside (during the time frame of NICI-2005) 5-10% of its annual budget as ICT budget to, among other things, support the implementation of their programs including meeting the cost of the procurement of ICT products, services and training.

The Plan Execution and Coordination Committee (PECC) of each implementing agency (at least those in the civil and public sector) was, among other things, charged with the responsibility of identifying and mobilizing the necessary resources for the implementation of the assigned programs and initiatives for their respective organizations. A number of the implementing agencies indicated that the financial resources they managed to mobilize came from both government and donor sources.

#### **Expertise Availability Challenges**

Another common area of challenge faced by the implementing agencies related to the lack of expertise and the difficulty in getting or recruiting the right technical and other key personnel to support the implementation of their respective components of the Plan. The lack of requisite qualified human resources and expertise in key technical and professional areas at the start of the process has been well documented (see section 2.2), especially within the public sector.

Also identified as a key challenge was the difficulty some of the agencies faced in appreciating and/or understanding some of their assigned initiatives. It is worth pointing out, however, that for the vast majority of the implementation agencies the problem was not knowing what to do, but rather how to mobilize the requisite financial and technical resources and expertise to implement their designated plan actions and TBMs.

#### **Plan Implementation Support and Coordination Challenges**

Some of the implementing agencies identified plan implementation support and coordination as a problem area. Specifically, some listed lack of institutional, logisti-

cal and technical support from their own organization or RITA as problem areas, whilst a number stated lack of coordination from RITA as a key implementation challenge. On RITA itself, there was the problem of lack of internal capacity and resources to discharge its coordinating role. RITA, until recently, has been operating on a skeleton staff.

There was also a problem of not putting in place and implementing the requisite structures and framework proposed in the Plan for facilitating the monitoring and evaluation (M&E) of the implementation of the programs and initiatives.

#### **In Conclusion**

A number of these challenges faced during the implementation of the NICI-2005 Plan will need to be addressed within the context of the implementation of the NICI-2010 Plan for better results.

### **2.4 A Review of the Implementation of the NICI-2005 Plan: Documenting Some of the Achievements**

The goal of the NICI-2005 Plan was to support the development of the necessary economic base and environment to facilitate the process of moving Rwanda from a PAE to a PIKE. The Plan therefore was to provide the spring-board from which Rwanda can take off to achieve the transformation of its economy to a PIKE by implementing subsequent rolling NICI Plans (NICI-2010, NICI-2015 and NICI-2020 Plans).

Based on its eight pillars (serving as sub-plans), the NICI-2005 Plan was aimed at supporting the development of the “take-off base” through:

- the implementation of special ICT promotion packages, policy instruments and incentives;
- the development of the necessary human resources in ICTs and other professional areas;
- the implementation of a number of national ICT applications across all sectors;
- the mobilization and deployment of the necessary financial and technological resources to support the implementation of targeted programs and initiatives;
- the modernization of the civil and public service, one of its aspects being the computerization of their activities and operations;
- the development of standards, best practices and guidelines to guide the deployment, exploitation and development of ICTs in key sectors; and
- provision of the necessary legal, regulatory and insti-

tutional framework to support ICT development in Rwanda.

To serve as a basis for guiding the development and the implementation of the NICI-2010 Plan, in this section we document some of the achievements of the implementation of the NICI-2005 Plan in terms of a number of sub-plans (pillars) including the:

- *Human Resource Development Sub-Plan*
- *ICTs in Education Sub-Plan*
- *Facilitating Government Administration and Service Delivery Sub-Plan*
- *Developing and Facilitating the Private Sector Sub-Plan*
- *Deployment and Spread of ICTs in the Community Sub-Plan*
- *ICT Infrastructure Development Sub-Plan*
- *Foreign Direct Investment Drive in ICTs Sub-Plan*
- *Legal, Regulatory, Institutional Provisions and Standards Sub-Plan*

#### **2.4.1 Documenting Some of the Achievements in the Area of Human Resource Development**

The lack of human resources in all the key skill areas has been identified as one of the development changes facing Rwanda. At the start of the process, for example, a number of the Government Ministries lacked the requisite professional and technical personnel to support key operations and activities within these organizations, in areas such as networking, systems development and support, programmers, software developers, systems administrators and managers, among others.

The implementation of a number of the programs and initiatives of the *Human Resource Development Sub-plan* of the NICI-2005 Plan has to some extent addressed the skill shortage situation in a number of areas. For example, as part of the setting up of the Information Technology Services Division (ITSDs) of the Ministries and PSOs, an extensive training program was implemented to train network technicians, computer technicians, software and support staff, as well as computer systems managers and administrators. Also, since the start of the process, the nation’s universities and colleges have introduced new academic and other training programs in a number of skills and professional areas in order to produce the requisite number of graduates for the public and private sectors.

The higher institutions of learning, notably NUR, KIST and KIE, among others, have during the time frame of

the implementation of the NICI-2005 Plan started new programs which in the next few years will contribute to addressing the human resource shortfall in a number of critical skill areas relevant for supporting the development of the Rwandan information economy and society.

**Table 5: Skills Development in Higher Institutions of Learning**

Type of Qualification	Total Graduated 2002-05
Engineering and Technology Degrees (Bachelors Level)	BSc. (Eng) in Computer Engineering and IT
	131
	BSc. (Eng) in Civil Engineering and Environment Technology
	107
	BSc. (Eng) in Electromechanical Engineering
Engineering & Technology (Diploma Level)	58
	BSc. in Food Science and Technology
	65
	BSc. (Eng) in Electrical and Electronic Engineering
	4
Computer Science/ICT Degree (Bachelor Level)	Diploma – Computer Engineering and Information Technology
	126
	Diploma Technology -Electromechanical
	144
	Diploma Technology – Civil Engineering and Environment Technology
Computer Science/ICT (Diploma Level)	182
	Diploma – Food Science and Technology
	41
	Diploma Technology – Automobile
	20
Computer Science Degree (Masters Level)	Diploma Technology – Electronics
	11
	Diploma – Computer Engineering and Information Technology
	126
	BSc. in Computer Science
YEARLY TOTALS: ALL DEGREES AND DIPLOMAS	15
	ICT Intermediate Skills Program for Secondary Schools Teachers
	195
	Introduction to CISCO Router Configuration
	19
	Implementing and securing Wireless Networks
	21
	Computer Hardware Maintenance
	318
	Computer Networking and Administration
	232
YEARLY TOTALS: ALL DEGREES AND DIPLOMAS	Software Development and Management
	115
	NCC Education
	23
	UNIX/LINUX
	17
	CISCO Academy Diploma
	26
	Diploma in IT
	74
2002	387
2003	263
2004	794
2005	801

The emergence in recent years of skills training and human resource development companies in the private sector in areas like computer training and in other professional skill areas, are also contributing to addressing the human resource shortfall in the country.

For example, KIST and NUR, have between 2002 and 2005 graduated close to 2000 professionals in engineering, technology and computer science/ICTs at mainly the BSc and Diploma levels. The breakdown of the types of skills developed is detailed below.

stitution, has also been training civil and public servants in a number of professional skill areas including those of ICT and management, among others, over the duration of the NICI-2005 Plan.

It is also anticipated that the newly establish Human Resource Institutional Capacity Development Agency (HIDA), as one of the initiatives of the NICI-2005 Plan, has and will continue to contribute to addressing aspects of the human resource shortfall in critical skill areas.

#### 2.4.2 Documenting Some of the Achievements in the Area of ICTs in Education

At the start of the implementation of the NICI-2005 Plan in 2001, only one of the 2,300 primary schools of Rwanda (namely the Kigali Academy) had computers, with none of the secondary schools having computers.

The implementation of the Plan has given rise to a number of “computers-for-school” initiatives. Apart from the initiatives of the Ministry of Education, a number of other initiatives were implemented by NGOs and the private sector including the ICTs in Schools initiative of WorldLink as well as that of Coca Cola in partnership with the Ministry.

Currently 1,138 out of 2,300 primary schools in Rwanda have at least a PC or a Laptop, with 100 of these schools having about two PCs each. Close to 2,000 PCs have now been deployed in the secondary schools throughout the country. The Ministry of Education planned to further procure and deploy 4,000 computers in 400 schools during the 2005/2006 academic year.

In relation to Internet access, while only one school in the entire country had Internet access at the start of the process, 40 schools in Kigali City alone now have access to the Internet. A number of urban and rural schools in other regions of the country have Internet access also. It is anticipated that as the roll-out of the communications infrastructure expands into the rural areas, Internet access will be expanded to the rural schools. In relation to the training and deployment of computer-literate teachers in Rwandan schools, a number of initiatives have been implemented by the Ministry of Education and other organizations. As of the end of the Plan period about 1,000 teachers have been trained in computer literacy and basic computing, and have been deployed into 120 primary schools. In addition to this, over 2,000 computer literate teachers has been trained and deployed into secondary schools throughout the country.

#### 2.4.3 Documenting Some of the Achievements in the Area of Facilitating Government Administration and Service Delivery through the Deployment and the Utilization of ICTs

##### The Computerization of the Government Ministries and the PSOs

At the beginning of the process, very few Government Ministries and PSOs had computerized their operations, although at the time some of them had a few computers in their offices. The majority of these were using them for basic applications such as word processing and in a few cases for spreadsheet and dial-up access to the Internet, which was then limited to just a fraction of the staff. Not many of these organizations were utilizing their computer systems for high-end value-added applications such as information management (MIS, DSS), databases, personnel management systems, accounting, and budgeting systems. Most of the Ministries and the PSO did not have corporate networks. There was no inter-networked system linking the government Ministries and the PSOs. The implementation of the programs and the initiatives of the *Facilitating Government Administration and Service Delivery Sub-plan* has changed most of this. We review some of the achievements in this area, below.

##### Implementation of Organizational Network

After nearly four years of the implementation of the NICI-2005 Plan, the situation in the Government Ministries and PSOs is now very different regarding the implementation of organizational/corporate networks, when compared with the situation at the start of the process. For example, unlike in 1999/2000, the majority of Government Ministries and PSOs now have in place their corporate networks, with some, like the Ministry of Justice, having a countrywide area network linking the prosecutor's offices and other judicial agencies.

##### The Implementation of Sections of the Government-wide Network (GovNet) System

At the start of the process, there was no government-wide network inter-linking the Ministries and the PSOs. Now, the government-wide fiber backbone network (GovNet) is in place and has the capacity to inter-link the Kayciru cluster of Government Ministries, the MINIJUST-National Assembly cluster, the PRIMATURE-MINADEF cluster, and part of the city center cluster of Government Ministries and PSOs. Currently, 17 Government Ministries and 12 PSOs (including

three major hospitals) are physically connected to the fiber backbone network. There are plans in the near future to connect the remaining Ministries and PSOs to backbone and provide a common shared gateway to the Internet for all these agencies.

#### Improvements in Internet Connectivity and Access

On Internet access, at the start of the Rwanda ICT4D process, Rwandatel was the only ISP in Rwanda operating a 256kpbs gateway link to the Internet with a POP in Kigali where the majority of its subscribers (most using dial-up access) reside.

The use of the Internet was not widespread outside Kigali at the time. Within the civil and public service, few organizations were connected to the Internet. Even in the case of the connected Government Ministries, access was by dial-up and in most cases only one or two offices had access to the Internet. In most cases, the Internet was not used to support the organizational activities.

Unlike in 1999/2000 when the vast majority of the Government Ministries and PSOs did not have access to the Internet, the implementation of the NICI-2005 Plan has made it possible for almost all the Ministries to have high speed access to the Internet, in most cases spread throughout the entire organization.

A number of the Ministries have VSAT links whilst others have leased-line, (optical fiber) connections. As shown below (Incomplete), dial-up access is not a common feature as was the case at the start of the process.

Another development is that while Rwandatel was the only ISP in Rwanda with a 256K long-haul link, Rwandatel-Terracom now have a 48Mbs long-haul link to the Internet backbone, but there are also a number of other ISPs and Internet gateway/bandwidth service providers. These include Artel (1.5Mb+ link) and ISPA, which is providing broadband wireless Internet access service to corporate subscribers in the public and private sectors.

#### The Implementation of Organization-Specific Applications and Information Systems

The vast majority of Government Ministries and PSOs, at the start of the ICT4D process, did not implement organization-specific computer-based applications, information and database systems to support admin-

istrative and service delivery activities. The majority were using computers for standard applications like word processing, spreadsheets, etc.

Some of the programs and initiatives of the NICI-2005 Plan were targeted at the development and deployment of high-end, mission critical application systems for each of the Government Ministries and PSOs. Some of the Ministries and PSOs have implemented some of their critical applications and back-office systems, while others are in the process of implementing them. The following (incomplete) is a list of the Government Ministries which have implemented some of the organization-specific applications and information systems.

#### The Training of ICT Technical Staff and Personnel

Extensive training in the area of ICTs has been conducted, targeting all levels of staff within a number of the Ministries and PSOs. Most Ministries now have in place skeleton ICT technical staff for their ITSDs.

To date, close to 120 technical staff have been trained and deployed in the Ministries and PSOs. The technical skill areas include network administrators, systems developers, software support staff, database administrators and training staff.

#### 2.4.4 Some Achievements in ICT Infrastructure Development and Internet Infrastructure Roll-out

In 2001, at the start of the process, Rwanda's ICT infrastructure was under-developed. The total number of fixed telephone lines was only 22,000. There were only 67,521 mobile subscribers and only 128 rural telephone lines. By 2004, the number of fixed telephone lines had increased to 22,972 (an increase of 4.4%); the number of mobile subscribers had increased dramatically to 147,343 (a jump of 118.2%); and the number of rural telephone lines had also increased dramatically to 565 lines (representing an increase as high as 341%).

**Table 6: Achievements in Rwanda's ICT and Internet Development**

	2001	2004	Percent Change
Fixed telephone lines	22,000	22,972	4.4%
Mobile subscribers	67,521	147,343	118.2%
Rural telephone lines	128	565	341%

Source: RURA Database 2005

The table below provides details of some baseline data in relation to ICT deployment indicators during the major part of the NICI-2005 Plan time frame.

**Table 7: Some ICT Indicators (2004-2005)**

YEAR	2004	2005
Telephone lines	22,972	23,903
Teledensity	0.27	0.30
Mobile subscribers	147,343	222,978
Telecommunications revenue (MN US\$)	57.5	57.8
Satellite dishes/antennas (VSAT)	452	490
Internet service providers (ISPs)	4	4
Internet subscribers	2,875	2,949
Internet bandwidth (Kbps)	512	1024

Source: RURA Database 2005

#### Concentrating on Infrastructure Development

A number of infrastructure development and roll-out companies were also licensed during the time frame of the implementation of the NICI-2005 Plan to provide communication backbone network services including those of data, voice (fixed and mobile) and video services. The key ones are: Terracom Communications Ltd, which was licensed to provide telecommunication services including mobile, fixed lines, VoIP and data services; Artel Communications Ltd, licensed to provide rural as well as urban telecommunications services; and MTN/Rwandacell for the provision of mobile, among other services. These new entrants into the Rwanda communication service provision scene have a nationwide coverage.

Terracom Communications has deployed over 140km broadband backbone fiber network to-date, including a Kigali-ring, and a national backbone link connecting Kigali, Gitarama and Butare, among. By the end of the NICI-2005 Plan time frame, the company had planned to roll out a total of 256km national fiber backbone network. On future plans, Terracom's network will cover the entire country by the project completion date of 2007. The backbone network is currently being used for data, voice, Internet access and video-on-demand services.

Artel Communications has also so far installed VSAT network covering (former) 90 districts throughout the country. Most of these are rural districts. On other ICT infrastructure networks, the Rwandan Academic and Research Network project is on-going and currently the National University of Rwanda (NUR) in Butare and

the Kigali Institute of Science and Technology (KIST) in Kigali are interconnected by a 128Kbps link. They share local traffic through the Rwanda Internet eXchange point (RINEX). Also, 39 schools are interconnected via a wireless network that is being used for data and Internet traffic including VoIP applications.

The Ministry of Education plans to inter-connect about 400 schools in the near future.

#### 2.4.5 Documenting Some of the Achievements in the Area of the Deployment and Spread of ICTs in the Community

Rwanda has made some progress in the area of deployment and spread of ICTs within the society and economy during the implementation of the NICI-2005 Plan. Appendix A provides details of an assessment of Rwanda's e-readiness at the close of the implementation of the NICI-2005 Plan. We highlight below some of the key achievements in this area.

#### The Deployment of Cyber Cafes and Telecenters

Unlike the situation at the start of the process when Rwanda had only one cyber café in operation in Kigali, numerous cyber cafes and telecenters can now be found in different cities and towns throughout the country. The majority of these were opened during the time frame of the NICI-2005 Plan.

Currently, there are over 30 reasonably sized cyber cafés operating in Rwanda. Kigali has ten, Butare four and Gisenyi six, with all the other major towns – including Gitarama, Kibuye, Kibungo among others – each having

at least one cyber café. All hotels and almost all Guest Houses and Inns have in-house cyber cafés to cater for their guests and the public. In addition to the public cyber cafés, all the universities and colleges have cyber café facilities, some of which are opened to the public.

The increased number of cyber cafés operating in Rwanda was largely due to the enabling environment created by the policy and plan development and implementation process in terms of infrastructure development, and the reduction in the price of computer equipment and resources (partly due to the removal of taxes and import duties on computer products). Also, the emergence of cyber-cafés in every town and city since the beginning of the process can be attributed to the public awareness created by the process in terms of seminars, public awareness campaigns and the constant reference being made in numerous speeches by the President, his Ministers and other Government officials over the past five years as to the importance of ICTs in facilitating Rwanda's development.

Apart from the cyber-cafés as community access points to the Internet, Rwanda also moved from a situation of not having a single telecenter at the start of the process to now having close to ten telecenters spread all over the country. These centers are used by the public for access to the Internet, telephone, fax and secretarial services

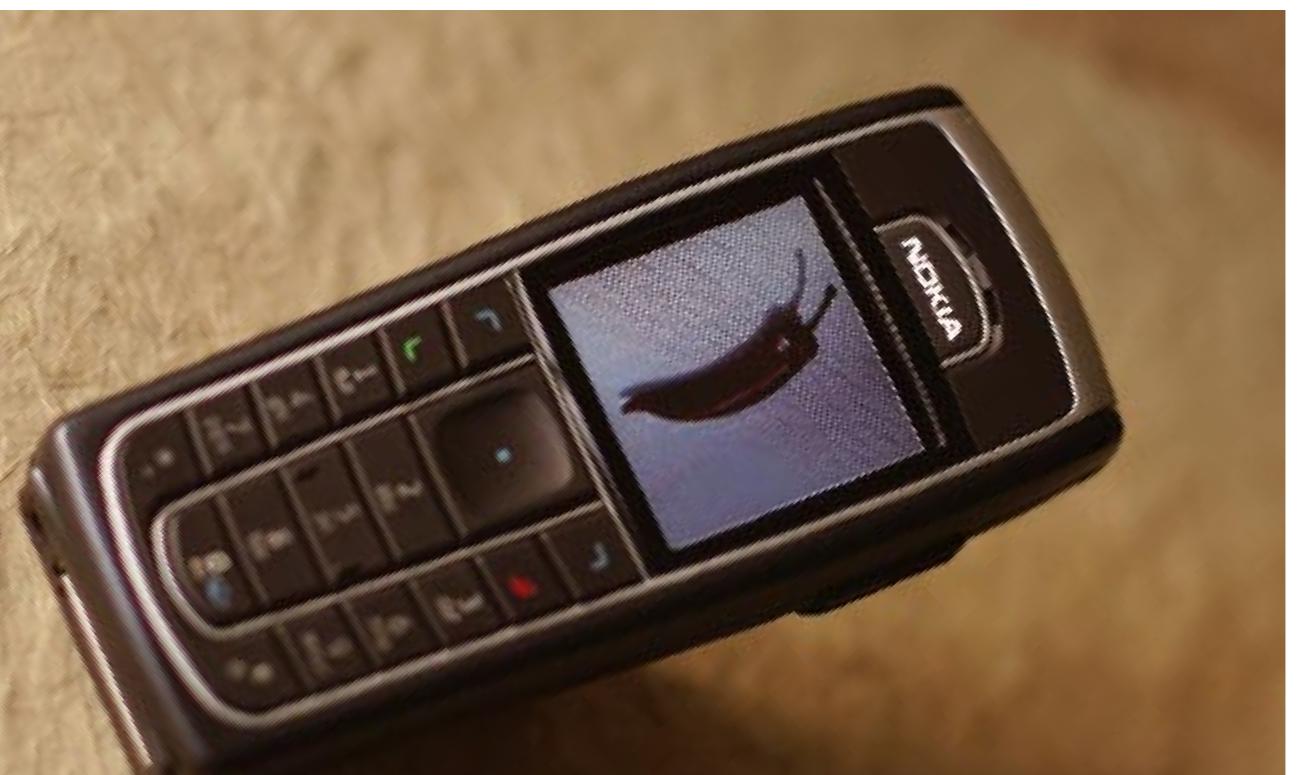
as well as basic computer training services. Kigali has five of these telecenters.

#### **Implementation of Telemedicine Initiatives**

Pilot telemedicine projects are ongoing in key hospitals in the country since the start of the implementation of the NICI-2005 Plan. Some of the hospitals and health centers taking part in these pilot projects include the King Faisal Hospital (Kigali), the Central University Hospital of Kigali, the Central University Hospital of Butare, and the Central Hospitals in Ruhengeri and Cyangugu.

#### **The Creation of Awareness**

Since the start of the Rwandan ICT4D process, serious effort has been put into raising public awareness on the importance of the need to deploy ICTs to facilitate Rwanda's development process. This effort is being led by the President, and it has now been acknowledged that public awareness of the ICT4D process, and the need to use these technologies to facilitate Rwanda's socio-economic development is very high in the country. Rwanda is now regarded worldwide as a nation serious about the development, deployment and exploitation of ICTs, with its ICT4D Policy and Plan serving as a model for a number of African and other developing countries. It is now acknowledged both within and outside the country that ICTs are high on Rwanda's development agenda.



#### **2.4.6 Documenting Some of the Achievements in the Area of Developing and Facilitating the Private Sector**

##### **The ICT Sector and Industry**

The Rwanda ICT sector and industry was under-developed at the start of the implementation of the NICI-2005 Plan in 2001. Most of the computer companies operating in the industry at the time were only involved in the sale of imported computer hardware and software. No company at the time was involved in the assembly of computers or other hardware equipment, and software development activities were non-existent.

Rwanda can now boast of a computer assembly company, and a few others involved in the development of software and systems for the domestic and export markets. A number of web-based systems development companies have also started operating in Rwanda with some of these involved in the development of web and other Internet applications. Computer training is rapidly becoming a major growth area with a number of locally established and foreign companies active in the sector.

The provision of telecommunication and other communication services in the area of telephone services (fixed and mobile), Internet services, bandwidth services, etc, remains the major activity in the Rwanda ICT sector and industry.

##### **ICTs in Agriculture**

A number of initiatives in the area of ICTs-in-agriculture are being implemented. Apart from the use of the technology to train and conduct research in the agriculture colleges and research institutes, the Ministry of Agriculture has computerized some of its activities and operations including implementing its corporate network system. Also, a number of "e-agriculture" demonstration and pilot projects have been implemented, with a number of these on-going.

On the whole, while very little deployment and utilization of ICTs in the agriculture sector was evident during the start of the process in 1999, the sector has since witnessed a lot of awareness creation as to the role of ICTs to support agricultural processes and activities including enhancing productivity, yield, processing, packaging, marketing and the delivery processes. This awareness is beginning to bear fruit as operators in the sector, including farmers, service providers and decision makers, are either adopting ICTs or exploring ways in

which these technologies can be used to improve and enhance their operations and activities.

#### **Conclusions**

On the whole, through the implementation of a number of the programs and initiatives of the various sub-plans of the NICI-2005 Plan, Rwanda has made some progress in a number of areas including human resource development, the deployment of ICTs to facilitate Government administration and service delivery, developing the nation's ICT infrastructure, the deployment of ICTs to facilitate teaching and learning in schools, the deployment and spread of ICTs within the communities and facilitating development of the private sector in general, and the ICT services sector and industry in particular.

#### **2.5. A Review of Progress Made Towards the Achievement of Specific Policy Commitments as per the ICT4D Policy**

The ICT4D Policy, on which the NICI-2005 Plan was based, provided details of the various Government policy commitments aimed at facilitating progress towards achieving the aspirations of the ICT-led socio-economic development vision, namely to improve the quality of life of the people of Rwanda by enriching their social, economic and cultural well-being through the modernization of the economy and society. As an aspect of reviewing the implementation of the NICI-2005 Plan, with particular reference to the extent to which progress has been made on these policy commitments, in this section we review the performance on each of these policy commitments within the context of the implementation of the sub-plans of the NICI-2005 Plan. For each of the broad policy areas, the stated policy commitments are presented followed by a review of progress made.

##### **2.5.1 Creating and Facilitating an Enabling Environment for the Development of the Rwandan Information Society and Economy**

The Government, through the implementation of a number of specific programs and initiatives forming part of the sub-plans for the NICI-2005 Plan, and specifically those relating to the development of the private sector, ICT infrastructure development and promoting FDI drive in ICTs, has put in place special instruments and incentive packages targeted at accelerating the development of the Rwandan information society and economy. For example, as part of the implementation of the NICI-2005 Plan, the Government has totally removed taxes and import duties on computer equipment and

parts. This has contributed to a reduction in the prices of computer products, improving the level of computer penetration within the society and the economy. This effort on the part of the Government has encouraged the local assembly of computers which, in turn, has contributed to making computers affordable to the public at large.

On the whole, some progress has been made as per the policy commitments for facilitating the development of the Rwandan information society and economy through the implementation of a number of special policy packages and incentive programs and instruments.

## 2.5.2 Human Resource Development and Deployment is the Key

The Government, as part of the *Human Resource Development* Sub-plan of the NICI-2005 Plan, has put in place a number of human resource and skills development programs and initiatives that have been implemented by various Government Agencies, PSOs, the universities and colleges, as well as the private sector over the last five years. These efforts have contributed to addressing, to some extent, the serious human resource shortfall that Rwanda experienced after the 1994 genocide. Some progress has therefore been made towards the commitment to put in place and facilitate the implementation of a comprehensive human resource development program to support the development of the Rwandan information society and economy.

## 2.5.3 Commitment to the Deployment and Exploitation of ICTs in the Educational System

The Government, as part of the *ICTs in Education Sub-plan*, put in place and implemented a number of programs and initiatives aimed at facilitating the rapid deployment and utilization of ICTs in the educational system.

As evident from the details presented in section 2.4.2, progress has been made within the time frame of the NICI-2005 Plan in the area of the deployment of computers in the schools as well as in the universities and colleges. A number of ongoing “schoolnet” initiatives by the Ministry of Education and other agencies and NGOs have contributed not only to improvements in the computer-to-student ratio in schools but also to the spread of Internet access in a number of these schools.

At the level of the universities and colleges, the use of computers to support, teach, learn and research, is now a

common feature in these institutions. Computer studies and computing is now an integral part of all diploma and degree level programs in all the nation's institutions of higher learning, both public and private. In a nutshell, some progress has been made within the context of the implementation of NICI-2005 Plan as per the policy commitment to facilitate the rapid deployment of ICTs within the educational system.

## 2.5.4 Commitment to the Deployment of ICTs to Support the Operations of the Civil and Public Services

Some progress has been made within the time frame of the NICI-2005 Plan in the area of the deployment and exploitation of ICTs to support the activities and operations of the civil and public service. The achievements documented in section 2.4.3 provide an indication of the extent to which progress has been made in this area. Not only has the level of computer penetration in the civil and public service risen, but also most of the Government Ministries and PSOs now have in place their corporate/organizational computer networks, with a number of them linking their networks to the national fiber backbone network.

Major improvements have also been made in the spread of Internet connectivity and access within these organizations. Some progress has also been made in the development of critical application systems to facilitate the operations and activities of a number of organizations within the civil and public service.

## 2.5.5 Commitment to the Development of the Service Sector into the Business Service Hub of the Region

Not much progress has been made towards the development of the services sector of the economy into the business hub of the region. Although a number of Government policy initiatives have been put in place as part of the implementation of the NICI-2005 Plan aimed at promoting the development of the private sector, the services sector – especially the ICT services sector – is still under-developed. And although a number of local and foreign ICT start-up companies have commenced business in Rwanda since the start of the implementation of the NICI-2005 Plan given the conducive investment climate and environment created by the process, the number still falls far short of the target envisaged in the plan.

Furthermore, although the Rwandan Banking sector has improved during the implementation of the NICI-2005

Plan in terms of the ranges of financial and banking services they now have on offer to the public, the critical mass, the volume of business, and the activities within the services sector that is required to transform Rwanda into the business service hub of the region is far from being realized. However, the Banks have made some progress in the use of ICTs to facilitate their operations and service delivery including certain electronic banking services.

## 2.5.6 Commitments to Facilitating the Private Sector

As per its policy commitments in this area, the Government has put in place a number of programs and initiatives within the NICI-2005 Plan to facilitate the development of the private sector as well as to create the necessary stable economic and investment climate to facilitate both domestic and foreign private investment in the development of the telecommunication and other ICT infrastructures. Similar progress and investment has been witnessed since the start of the implementation of the NICI-2005 Plan in the energy sub-sector, which has experienced some problems recently.

On the whole, the general climate for facilitating the development of the private sector has improved in the last couple of years but the corresponding investment in the sector from both local and foreign sources still falls far below expectations. There is no doubt that activities in the ICT services sector has picked up during the implementation of the NICI-2005 Plan, but more needs to be done in terms of policy incentives, targeted programs and initiatives to promote and accelerate the development of the private sector to ensure its envisaged contribution to the rapid development of the Rwandan information society and economy.

## 2.5.7 Commitment to the Development and Liberalization of the Telecommunications, Communications and the Mass Media Sector

Rwanda has made major progress in the area of liberalizing its telecommunications, communication and mass media sector. During the time frame of the NICI-2005 Plan, the Government has put in place and implemented a number of legal and regulatory provisions and legislations that have contributed to liberalizing the telecommunications and communication sector and facilitated the introduction of competition within the sector. The mass media sub-sector has also opened up with the introduction of private FM radio stations

as well as privately owned newspapers and other mass media outlets.

Investment in the telecommunications sector has improved substantially since the start of the NICI-2005 Plan implementation as additional operators and providers were licensed to provide services both locally and internationally.

## 2.5.8 Commitment to R&D Initiatives to Support the Development and Exploitation of ICTs

Not much has been achieved in the area of promoting and supporting R&D initiatives in the research institutions, universities and colleges.

Also, very little has been done in the areas of promoting and facilitating partnership, collaboration and linkages between local and foreign R&D institutions in order to speed up the process of knowledge and know-how transfer to Rwandans. Some of the Rwandan institutions of higher learning and research have attracted some institutional collaboration with their foreign counterparts but not much progress has been made towards raising the level of R&D work in these institutions as a result of these partnerships and collaborations.

Rwanda still has a long way to go in promoting and facilitating scientific R&D work to a level that could have an impact on Rwanda's capacity to develop, produce, manufacture and assemble ICT products and services as a step towards developing a local, globally competitive ICT service sector and industry. Nonetheless, some of the academic and technical staff at the two main universities, RITA and one of the fast emerging private software development companies, are beginning to do some useful R&D work, including in the areas of ICT socio-economic impact, network optimization and security, solar-powered energy for ICT equipment, low-power thin-client PCs deployment, to mention a few.

## 2.5.9 Commitment to Facilitating an Investment Climate for the Mobilization of Financial and Technological Resources

Not much has been achieved during the time frame of the NICI-2005 Plan in the area of facilitating the mobilization of both local and foreign direct investment to aid Rwanda's socio-economic development. However, some progress has been made in attracting investments into sectors like agriculture, tourism and to some extent the ICT sub-sector, in particular in attracting invest-

ments into the development of the telecommunications and communications infrastructure.

Sectors like the manufacturing sub-sector of industry has seen some improvements in FDI, but on the whole a lot more need to be done to attract the critical mass of investments needed to accelerate the development of the key sectors of the economy, in particular those lead sectors such as the services sector and the industrial sector, which are key to the development of Rwanda's information society and economy. The recent appointment by the Cabinet of a Legal Experts Committee to review and suggest improvements to the investment laws and environment should go a long way at attaining the desired goal.

#### **2.5.10 Commitment to Physical Infrastructure Development**

Some progress has been made within the time frame of the NICI-2005 Plan in the area of improving both the physical and the communications infrastructure of Rwanda. The road network, for example, has improved remarkably, and so has the nation's telecommunications network for voice, data and video transmission. The Internet access infrastructure, both in terms of spread and bandwidth, has also improved since the start of the implementation of the NICI-2005 Plan. For some time now the power infrastructure has been a bottleneck to the development of the ICT sector and the economy as a whole. Efforts are under way to address the shortfall in the country's power/energy supply.

#### **2.5.11 Enabling Legal, Regulatory and Institutional Provision**

Over the past five years the Government has taken steps to ensure that a favorable enabling political and socio-economic environment exists for the development of the Rwandan information society and economy. A number of legal, regulatory and institutional measures have also been taken by the Government, including the setting up of the Rwanda Information Technology Authority (RITA), the Rwanda Utilities Regulatory Agency (RURA), the High Press Council, and the Human Institutional Capacity Development Agency (HIDA).

As part of the implementation of the programs and the initiatives of the Legal, Regulatory, Institutional Provisions and Standard Sub-plan of NICI-2005, the Government has taken steps in a number of areas including the separation of Government regulatory and operator duties; the establishment of independent regulatory institutions; facilitating universal service and

access to basic and value-added telecommunications services; the creation of conditions for an investor friendly telecommunications environment; the development of local communications industry towards competitiveness and the encouragement of private investment in the ICT sector.

#### **2.5.12 Commitments to the Setting up of National ICT Structures and Bodies**

Some progress has been made as part of the implementation of the NICI-2005 Plan in the area of setting up institutional structures and bodies to coordinate and support the Rwanda ICT4D process. RITA has been set-up and efforts are being made to strengthen its capacity. A number of the Information Technology Services Division (ITSDs) have also been set-up in the Ministries and PSOs. A number of the PECCs too have also been set up. The National IT Commission (NITC), though that was recommended in NICI 2005 was not set up.

#### **In Conclusion**

On the whole, progress has been made within the context of the implementation of the NICI-2005 Plan on the various policy commitments targeted at facilitating and making progress towards transforming Rwanda into a middle income, information-rich, knowledge-based and technology driven economy and society. This is being done through the implementation of a number of NICI/ICT4D Plans over the 20 years time frame of the *Vision 2020* of which the NICI-2005 Plan was the first. The ultimate goal is to progressively transform Rwanda from a predominantly agriculture economy to that of a predominantly information-rich, knowledge-based economy (PIKE) and society.

Progress made on some of the policy commitments targeted at achieving this goal provides some indication of the achievements of the implementation of the programs and the initiatives of the NICI-2005 Plan.

### **2.6 An Evaluation of Progress Made Towards Developing the Rwandan Information and Knowledge Economy (IKE)**

As pointed out earlier, the ultimate goal of the Rwandan ICT4D process as per the ICT-led Socio-economic Development Vision is to transform Rwanda's predominantly agricultural economy (PAE) to that of a predominantly information and knowledge economy (PIKE).

Based on the premise that each of the features of the IKE (presented in section 1.4) can be regarded as constituting a sub-goal to be achieved as a step towards the development of a given nation's information-rich and knowledge-based economy, we reviewed progress made by Rwanda on each of these features as a result of the implementation of the NICI-2005 Plan.

Based on this review we established what is to be done within the context of the development of the details of the NICI-2010 Plan actions and identified the key sectors that need to be targeted for development within the plan.

#### **Development of a high-income economy dominated by trading in ICT products and services**

Despite the implementation of the NICI-2005 Plan, Rwanda is yet to make an appreciable progress towards transforming its economy into a high-income economy which is dominated by trading in ICT products and services.

Given the under-developed nature of the Rwandan services sector at the start of the implementation of the NICI-2005 Plan, it will take Rwanda some years of implementing the right private sector development enabling policies, programs and initiatives, targeted at the development of its services sector and industry, to make appreciable progress towards this sub-goal of transforming Rwanda into a high income economy dominated by trading in ICT products and services.

*What is being done within the context of NICI-2010 Plan?* Specific sub-plans of the NICI-2010 Plan are targeted at implementing Planned Actions aimed at moving the Rwandan economy into a high-income economy through ICTs.

*Sectors targeted in the NICI-2010 Plan:* The Economy (Services and Industry).

#### **Development of an economy characterized by a large commercial services sector with a reasonably large and vibrant ICT services sector and industry**

The Rwandan economy is still agriculture based and is a long way from being characterized by a large commercial services sector with a reasonably large and vibrant ICT services sector and industry. Some progress has been made as a result of the implementation of the relevant sub-plans of the NICI-2005 Plan towards the develop-

ment of the ICT services sector. More efforts will need to be targeted at implementing specific programs and initiatives that could positively impact on transforming the economy towards the achievement of the stated IKE sub-goal.

*What is being done within the context of NICI-2010 Plan?* Efforts are targeted at implementing specific programs and initiatives (within subsequent NICI including NICI-2010 Plan) that will positively impact on transforming the economy to one characterized by a large commercial services sector with a reasonably large and vibrant ICT services sector and industry.

*Sectors targeted in the NICI-2010 Plan:* The Economy (Services, Industry and e-Commerce Sector Development).

#### **Development of an economy characterized by a technology-based knowledge-driven industrial sector**

The composition of Rwanda's industrial sector has not changed greatly since the start of the implementation of the NICI-2005 Plan.

At the start of the process, Rwanda's modern industrial sector was under-developed and the situation is not different today. The sector is still handicapped by the high cost of factors of production and of imported equipment, the lack of qualified and experienced human resources, and low internal financing capacity and lack of entrepreneurship.

The implementation of the various programs and initiatives of the relevant sub-plans of the NICI-2005 Plan has made little impact on transforming the economy from being traditional cottage industry into one that is characterized by a technology-based, knowledge-driven industrial sector.

*What is being done within the context of NICI-2010 Plan?* The NICI-2010 Plan incorporates specific programs and initiatives that will enable Rwanda to start making progress towards an economy characterized by a technology-based, knowledge-driven industrial sector.

*Sectors targeted in the NICI-2010 Plan:* The Economy (Industry including the ICT Industry)

**Development of an economy with a globally competitive industrial and services sector which is to a large extent driven by cutting-edge R&D encompassing basic and applied industrial and product development**

Although some progress has been made in the development of the services sector of the economy, and to some extent the industrial sector, the Rwandan economy is far from being characterized as having a globally competitive industrial and services sector.

The implementation of the various programs and the initiatives of the relevant sub-plans of the NICI-2005 Plan had very little impact on driving the development of the industrial and the services sector through cutting-edge R&D work.

*What is being done within the context of NICI-2010 Plan?* The NICI-2010 Plan incorporates sectoral development sub-plans targeted at making progress towards developing a globally competitive services and industrial sector through ICTs.

*Sectors targeted in the NICI-2010 Plan:* The Economy (Services, Industry and e-Commerce) and R&D Sector (universities, research institutes and industry-based R&D).

**Development of an economy based on a rich pool of highly skilled human resources in critical skill areas relevant for developing and maintaining a competitive edge on the global market**

Although some progress has been made during the implementation of the NCI-2005 Plan in the development of the requisite human resources necessary for supporting the development of the Rwandan information and knowledge economy, there is still a major shortfall in key skill areas.

Rwanda's human resource base still lacks highly skilled human resources in critical skill areas necessary for developing and maintaining a competitive edge in global markets. More effort will have to be directed towards developing the requisite skills to support the development of Rwanda's IKE.

*What is being done within the context of NICI-2010 Plan?* The NICI-2010 Plan targeted specific human capacity development initiatives that will be required for the development of the IKE-relevant sectors of the economy. More efforts are being directed at develop-

ing the requisite skills to support the development of Rwanda's IKE.

*Sectors targeted in the NICI-2010 Plan:* Human Resource Capacity Development (Targeting critical skills development to promote the Development of the IKE), and Education (Targeting ICTs in Schools, colleges and universities).

**Development of an economy in which the majority of the working population is either directly or indirectly involved in information and communications related activities**

The vast majority of Rwanda's working population is not directly or indirectly involved in information and communications related activities.

At the start of the implementation of the NICI-2005 Plan, close to 90% of the working population were in the agriculture sector – a sector with very little involvement in information and communication related activities. The implementation of the NICI-2005 Plan has not significantly changed this situation.

*What is being done within the context of NICI-2010 Plan?* Efforts are being targeted at Planned Actions that will facilitate the modernization of key sectors of the economy.

*Sectors targeted in the NICI-2010 Plan:* The Economy (Services Sector, ICT Services, Industry and other Productive Sectors, e.g. Agriculture), Rural and Community Development (through the Deployment and the Exploitation of ICTs).

**Development of an economy with a modern, efficient and competitive agricultural sector**

Rwanda's agricultural sector has changed very little during the time frame of the NICI-2005 Plan. The sector is still largely subsistence-based, with very little mechanization of its operations and activities. The sector is far from being modern, efficient and competitive.

*What is being done within the context of NICI-2010 Plan?* The NICI-2010 Plan targets the modernization of the agriculture sector including the development of an agro-business sector.

*Sectors targeted in the NICI-2010 Plan:* Agriculture Sector and Development of the Agro-Business Sector.

**Development of an economy characterized by a widespread deployment and exploitation of ICTs within the society to support the delivery of health, education, government and social services**

Although the implementation of the programs and the initiatives of the NICI-2005 Plan have not resulted in a wide-spread deployment and exploitation of ICTs within the society, some progress has been made in the use of these technologies to support the delivery of educational services and to a lesser extent to support the delivery of health and government services.

The implementation of a number of the programs and initiatives of relevant sub-plans of the NICI-2005 Plan has enabled Rwanda to make some progress towards the development of its information economy and society through the use of ICTs to facilitate service delivery to the public at large.

*What is being done within the context of NICI-2010 Plan?* The NICI-2010 Plan builds on the achievements of the NICI-2005 Plan by incorporating programs and initiatives targeted at the exploitation and deployment of ICTs to support the delivery of health, education, government and social services. Apart from e-Education and e-Government, NICI-2010 has identified "Social Development" as a "Pillar" or sub-plan, meriting its own specialized Planned Actions.

*Sectors targeted in the NICI-2010 Plan:* Education, e-Government, Health, Rural Development.

**Development of an economy characterized by a modern educational system within which ICTs are widely deployed to facilitate the delivery of educational services at all levels of the educational system**

Although the deployment of ICTs within the Rwandan educational system is not yet widespread, the implementation of the NICI-2005 Plan has contributed to a major improvement in the situation that prevailed in Rwandan schools and higher institutions of learning at the start of the process.

Rwanda has therefore made major progress towards using ICTs to facilitate the delivery of educational services at all levels of the educational system.

*What is being done within the context of NICI-2010 Plan?* The NICI-2010 builds on the achievements of the NICI-2005 in the areas of implementing programs

and initiatives targeted at speeding up the process of the widespread deployment and utilization of ICTs within the educational systems at all levels from primary to tertiary levels.

*Sectors targeted in the NICI-2010 Plan:* Education (Primary, Secondary, colleges and universities).

**Development of an economy in which a reasonably large proportion of the population has access to information and communications technology products and services**

The development, deployment and exploitation of ICTs in Rwanda within the society and the economy have yet to reach a stage where a reasonably large proportion of its population has access to ICT products and services. The Rwandan economy is still a developing one dominated by the agriculture sector, with an upcoming services and industrial sector. Although the implementation of the programs and the initiatives of a number of the sub-plans of the NICI-2005 Plan had some impact on the production and provision of ICT products and services, Rwanda's economy still has some way to go to be characterized as predominantly trading in ICT goods and services.

*What is being done within the context of NICI-2010 Plan?* The NICI-2010 Plan incorporates programs and initiatives that can support the development of the Rwandan economy so as to enable a reasonably large proportion of the population to have access to ICT products and services, especially through the *Rural and Community Access Sub-plan*.

*Sectors targeted in the NICI-2010 Plan:* The Economy (Services, Industry, e-Commerce, e-Government) and Rural Development.

**Development of an economy characterized by a widespread deployment and exploitation of ICTs within the society to support the delivery of health, education, government and social services**

Although the implementation of the programs and the initiatives of the NICI-2005 Plan has not resulted in a wide-spread deployment and exploitation of ICTs within the society, some progress has been made in the use of these technologies to support the delivery of educational services and to a lesser extent to support the delivery of health and government services.

The implementation of a number of the programs and initiatives of relevant sub-plans of the NICI-2005 Plan has enabled Rwanda to make some progress towards the development of its information economy and society through the use of ICTs to facilitate service delivery to the public at large. Development of an economy in which the provision and delivery of goods and services of the economy's key sectors are to a large extent facilitated by information and communications technologies.

The Rwandan economy is far from being characterized as one in which the provision and delivery of goods and services of the economy's key sectors are to a large extent facilitated by information and communications technologies. The economy is still dominated by the agriculture sector which is predominantly subsistence agriculture-based with very little use of technologies. The services and the industrial sectors are still developing but have not reached a stage where a reasonable proportion of their activities (production and service provisions) are facilitated by ICTs.

The implementation of the NICI-2005 Plan therefore had little impact on the key sectors of the economy in terms of transforming their activities towards those that are supported and facilitated by ICTs.

**What is being done within the context of NICI-2010 Plan?**  
The NICI-2010 Plan incorporates programs and initiatives that will continue to support the development of the nation's ICT infrastructure and the development of the ICT Services Sector and Industry.

**Sectors targeted in the NICI-2010 Plan:** Telecom and Communications Sector, ICT Services Sector and Industry

#### Development of an economy based on an advanced and reliable national information and communications infrastructure

The nation's information and communications infrastructure has improved in the last couple of years during the time frame of the NICI-2005 Plan. The implementation of a number of programs and initiatives of some of the sub-plans has contributed to the roll-out of the ICT infrastructure in the country. Although some of the infrastructure deployment programs were targeted at rolling out advanced and realizable networks, much of Rwanda's territory is yet to be covered. The spread particularly of the landline network infrastructure is yet to reach the greater portion of the country, with most of the rural communities still remaining under-served.

**What is being done within the context of NICI-2010 Plan?**  
The NICI-2010 Plan builds on the achievements of the NICI-2005 Plan by incorporating programs and initiatives that will support the development and spread of the communications infrastructure. Specifically, it proposes the evolution of a national communications master-plan and the development of a national backbone, based on the master-plan.

**Sectors targeted in the NICI-2010 Plan:** Telecommunications and Communications Sector, ICT Infrastructure Development and Roll-out, ICT Services Sector and Industry, Regulatory Regime and Environment

#### Development of an economy based on a literate society with a high proportion of computer literates

Rwanda's illiteracy rate is still high, although improving. The implementation of the NICI-2005 Plan did make much impact on improving the general level of IT awareness and literacy in the country. With a larger number of the schools now involved in computers compared to the situation at the start of the process, Rwanda is set to progressively move towards becoming an IT-literate nation in the foreseeable future.

**What is being done within the context of NICI-2010 Plan?**  
The NICI-2010 Plan builds on the achievements of the NICI-2005 by incorporating ICT awareness and literacy programs and initiatives.

**Sectors targeted in the NICI-2010 Plan:** Education, e-Government, Community and Rural Development

#### In Conclusion

The analysis and evaluation of the socio-economic impact of the implementation of the NICI-2005 Plan, in particular the extent of the impact on key sectors such as services sector, industry, ICT sector, education, human capacity development, infrastructure development, agriculture and health, among others, provided an indication of the need to move Rwanda towards the realization of the vision to develop its information society and economy, within the context of the NICI-2010 Plan.

It is clear from the analysis and the details presented in this section that although some achievements have been registered by Rwanda as a result of the implementation of the NICI-2005 Plan, given the nation's socio-economic status at the start of the ICT4D process, special attention and effort will need to be targeted at deepen-

ing the development of some of the strategic sectors of Rwanda's economy in order to make appreciable and steady progress towards achieving the aspirations of the Vision for Rwanda (VfR) by 2020.

The review of the implementation of the NICI-2005 Plan has assisted in: (i) providing an indication of what should be the focus areas (pillars) of the NICI-2010 Plan; (ii) the identification of the programs and initiatives of the NICI-2005 Plan that are to be rolled over into the NICI-2010 Plan; (iii) providing an indication of the priority initiatives to target for implementation in the NICI-2010 Plan; and (v) providing an indication of what is being done within the context of the NICI-2010 Plan to enable Rwanda to stay on course towards the realization of the aspirations of the Vision for Rwanda, which is to transform the country into an information-rich, knowledge-based society and economy by 2020.

It is acknowledged that by the end of the implementation of the NICI-2010 Plan in 2010, Rwanda would have reached the half-way mark of the 20 years time frame of the *Vision 2020* and the ICT4D Policy.

Therefore, it is crucial to ensure that the NICI-2010 Plan achieves its stated goal of supporting and strengthening the economic base, and improves the economic environment to accelerate development and growth towards achieving an information-rich, knowledge-based society and economy, if Rwanda is to make progress towards the Vision for Rwanda.

## 3.0 ON THE DEVELOPMENT OF THE NICI-2010 PLAN

### 3.1 Introduction

Given that the analysis carried out in Section 2.0 provided a clear indication in relation to what needs to be done within the context of the NICI-2010 Plan to build on the achievements of the NICI-2005 Plan and accelerate Rwanda's development towards the realization of the aspirations of the Vision for Rwanda, in this Section we present specific details that guided the development of the NICI-2010 Plan.

These addressed specifics include issues relating to:

- (i) the need for the NICI-2010 Plan to make progress towards achieving the mission and strategies identified for the realization of the ICT-led development vision;

- (ii) critically examine and address the four W's (see section 3.4 below) for guiding the development of the Plan's details;
- (iii) the basic premise that will guide the development of the Plan;
- (iv) the need to regard the NICI-2010 Plan as one of the four rolling plans envisaged for the implementation of the provisions of the ICT4D Policy; and
- (v) the guiding principles that should be followed to develop the details of the Plan.

### 3.2 Developing the NICI-2010 Plan: The Need for Making Progress Towards Achieving the ICT4D Mission and Strategies

#### Achieving the Stated Missions

##### Sub-Mission A: To develop an ICT Industry for Rwanda

The NICI-2010 Plan needs to incorporate programs and initiatives that will enable Rwanda to make progress towards developing its ICT industry if it is to achieve its ICT-led development vision.

##### Sub-Mission B: To develop a highly competitive, value-added service sector with the potential to develop into a business-hub of the region

For Rwanda to make progress towards becoming a business-hub of the region, the NICI-2010 Plan will need to incorporate specific and special programs and initiatives aimed at achieving this goal.

#### Implementing the ICT4D Mission Strategies

##### Strategy A: To transform Rwanda into an IT-literate nation

The NICI-2010 Plan will need to incorporate programs and initiatives that build on but go beyond the achievements of the NICI-2005 Plan in this area.

##### Strategy B: To promote and encourage the deployment and utilization of ICTs within the economy and society

The NICI-2010 Plan will need to incorporate special initiatives and programs targeted at implementing this strategy.

##### Strategy C: To improve the efficiency of the Civil and Public Service

The NICI-2005 Plan has made progress in the area of improvement and modernization of the civil and public service through the exploitation and deployment of ICTs. The NICI-2010 Plan will need to build on

this within the context of e-Government programs and initiatives.

#### *Strategy D: To improve the information and communications infrastructure of Rwanda*

The NICI-2005 Plan has made progress towards developing and improving the nation's information and communications infrastructure. If progress is to be made towards the realization of the ICT-led development vision, the NICI-2010 will need to build on this achievement to increase spread and access to these technologies.

#### *Strategy E: To transform the educational system using ICTs with the aim to improving accessibility, quality and relevance to Rwanda's development needs*

The NICI-2010 Plan will need to build on the achievements of the NICI-2005 Plan in the area of transforming the educational systems through the deployment of ICTs.

#### *Strategy F: To improve Rwanda's human resource development capacity to meet the changing demands of the economy*

Human resources and in particular critical skill areas will need to be developed in order to drive progress towards developing the IKE. The NICI-2010 Plan will need to put into place specific programs and initiatives to address this.

#### *Strategy G: To develop the legal, institutional and regulatory framework and structures required for supporting the deployment and utilization of ICTs within the economy and society*

While the NICI-2005 Plan has made some achievements in this area, it is imperative that a comprehensive legal, regulatory and institutional framework be evolved within the context of the NICI-2010 Plan.

### **3.3 Developing the NICI-2010: The Guiding Premise**

The development of the programs and initiatives of the NICI-2010 Plan should take into account the aspirations and policy commitments of the Government as contained in the ICT Policy Statement of the Government.

The NICI-2010 Plan should enable Rwanda to make progress towards the goals of the *Vision 2020* through achievement of the aspirations of the ICT-led Development Vision which is: "To modernize the Rwandan economy and society, with ICTs as the engine for ac-

celerated development and economic growth, national prosperity and global competitiveness."

The NICI-2010 (like the other NICI Plans) should, in particular, incorporate programs and initiatives, the implementation of which will enable Rwanda to make progress towards the achievement of the stated mission: "To transform the Rwandan economy into a predominantly information- and knowledge-based economy (IKE) by modernizing its key sectors using information and communication technologies."

The NICI-2010 Plan should take into account the outcomes of the implementation of the NICI-2005 Plan and should at a minimum make progress on the achievements of the NICI-2005 Plan.

The NICI-2010 Plan should endeavor to address what the NICI-2005 Plan failed to accomplish as per its stated goal, which is: "To support the development of an economic base and environment for accelerated development and growth."

The NICI-2010 Plan, in addition to addressing the implementation shortfalls of the NICI-2005 Plan, should be aimed at programs and initiatives that are designed to achieve the stated goal of the NICI-2010 Plan, which is: "To Support the strengthening of the economic base and improve the economic environment to accelerate development and growth towards achieving PIKE."

The NICI-2010 Plan should take into account the fact that Rwanda will be reaching the half-way mark of the *Vision 2020* time frame by the completion date of the NICI-2010, and as such the Plan should incorporate requisite programs and initiatives whose implementation will accelerate Rwanda's development towards achieving the aspirations of *Vision 2020*.

### **3.4 On Addressing the Four W's**

The development of the details of the NICI-2010 Plan is guided by the need to address the four W's:

*Where we are:* The development of the programs and initiatives of the NICI-2010 should be guided by "where we are" in terms of the implementation of the NICI-2005 Plan (achievements and shortcomings and what needs to be rolled over).

*Where do we want to get to?* It is necessary to incorporate programs and initiatives in the NICI-2010 Plan that will lead to the achievement of the stated goal of the

NICI-2010 in the ICT Policy Document whilst moving Rwanda towards achieving the main mission of the ICT-led Development vision of the Government.

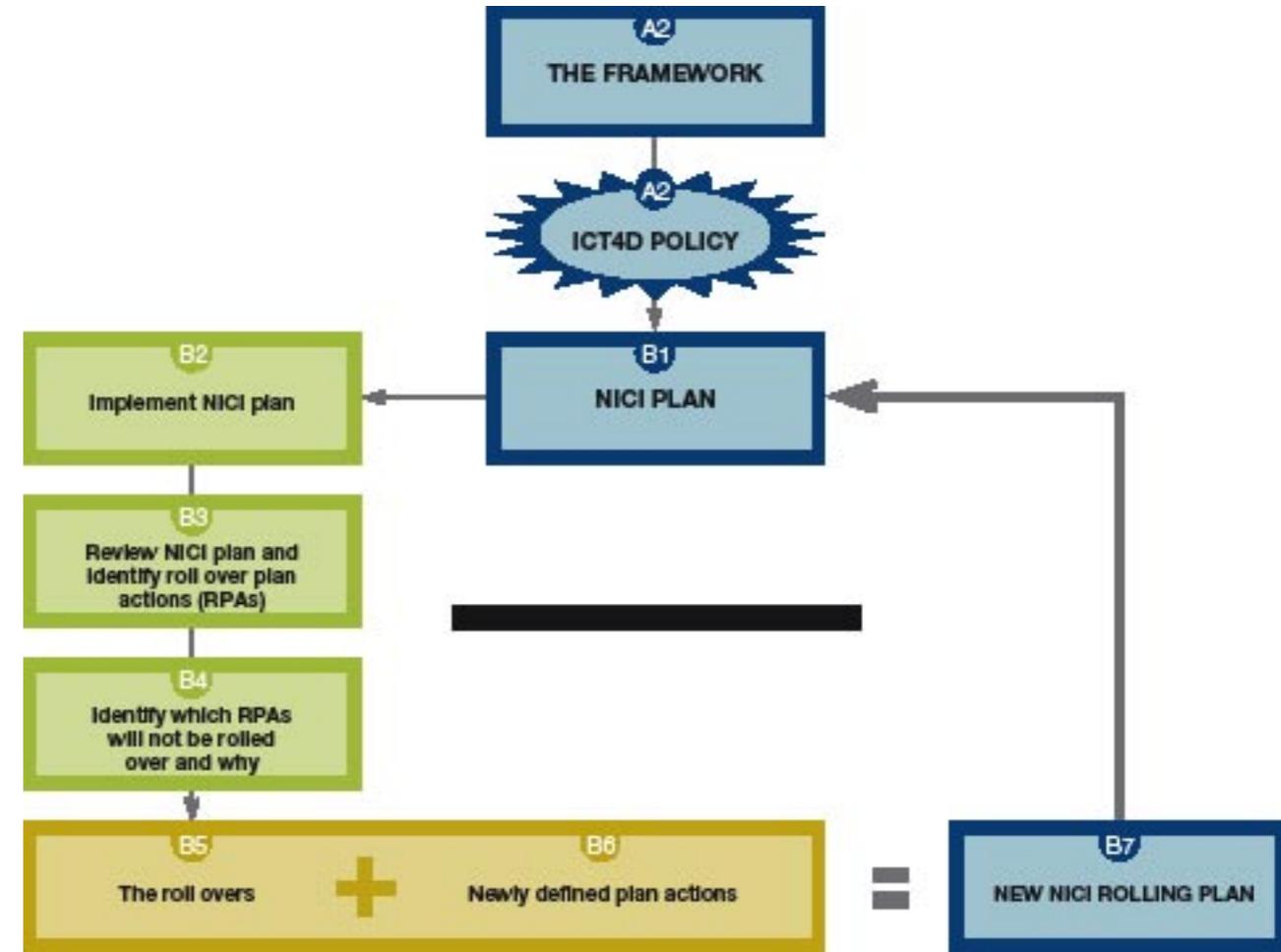
*When do we want to get there?* The programs and initiatives of the NICI-2010 Plan, whilst making for the shortfalls of the NICI-2005 Plan, must also be able to move Rwanda's economy and society towards a PIKE by 2020 through the implementation of subsequent NICIs.

*What do we need to do to get there?* Identify suitable and appropriate programs and initiatives for incorporation into the NICI-2010 that will in a realistic and practical way advance Rwanda's progression towards a PIKE.

### **3.5 On Developing the NICI-2010 as a Rolling Plan**

A key requirement for the development of the details of each of the rolling NICI plans is that the NICI cycle (detailed below) is to be followed. This means that all the NICI Plans will be anchored on the ICT4D Policy, i.e. each of these plans is to provide answers to HOW?

Figure 3: The NICI Plan Cycle



The policy objectives and commitments detailed in the Government's ICT4D policy document are to be implemented and realized through specific plan programs, actions and initiatives.

The entire NICI planning process (as detailed above), which is made up of the four NICI plans (of which NICI-2010 is one), is designed on the basis of the rolling-over principle. Hence, these four plans are not to be distinct, mutually exclusive, self-contained plans but rather inter-dependent rolling plans, with one plan rolling over into another. Therefore, the NICI-2010 Plan is perceived as a continuation of the NICI-2005 Plan, not separate or mutually excluded from it.

Steps B1, B2 and B3 (in relation to NICI-2005 Plan) have been completed. The review of the implementation of the NICI-2005 Plan (incorporating step B4) identified a number of the roll-over programs and initiatives (Planned Actions). Step B5 has also been undertaken to identify a number of new programs and initiatives for incorporation into the NICI-2010 Plan in addition to the roll-overs from the NICI-2005 Plan.



## PART TWO

## THE PLAN

### DETAILS OF THE NICI-2010 PLAN

“... IT CAN BE NO ACCIDENT THAT THERE IS TODAY NO WEALTHY, DEVELOPED COUNTRY THAT IS INFORMATION POOR ... AND FOR THAT MATTER NO INFORMATION RICH COUNTRY THAT IS POOR AND UNDERDEVELOPED ...”

*MAHATHIR MOHAMMED, FORMER PRIME MINISTER OF MALAYSIA*

## PREAMBLE

### Details of the Guiding Principles Underlying the Development of the NICI-2010 Plan

Like the NICI-2005 Plan, the development of the NICI-2010 Plan is based on the following guiding principles:

- The Plan is aimed at contributing to the realization of the *Vision for Rwanda* (VfR) as well as to the achievements of the relevant Missions and the Strategies of the Vision.
- The various programs, initiatives and corresponding Planned Actions of the Plan are designed to be practical, realistic and capable of being implemented, with clearly stated time-bound measurable (TBM) targets.
- The Plan took into account the fact that the Government will continue to formulate and implement its short to medium term socio-economic development and budgetary plans during the life span of the Plan. In this respect, the NICI-2010 Plan is not aimed at substituting this exercise. Rather, it serves as a point of policy-reference and a framework for complementing and supplementing this exercise within the context of the Government's long term goal to transform Rwanda into an information-rich and knowledge-based economy by pursuing an ICT-led socio-economic development policy.
- The Plan also incorporates a Program of Monitoring, Evaluation and Reporting Framework that allows for appropriate intervention procedures and actions with clear guidelines on how and when these can be activated and by which agency or authority. This Framework, forming a key component of the Plan implementation process, is developed to facilitate and coordinate an enforceable bottom-up monitoring and evaluation mechanism and reporting procedure involving a number of key players, namely: the Program Execution and Coordination Committees (PECCs) of the Government Ministries and the PSOs; the NICI Plan Development Unit (NPDU) of RITA; and the Plan Review Standing Committee (PRSC). Also to play a key role in this process is the Round Table Plan Review Meeting to be convened annually and chaired by H.E the President – the National ICT Champion.
- The Plan, as far as possible, is flexible enough to allow for its modification, revision and adaptation as the need arises during its five-year implementation time frame.

• Building flexibility into the implementation of the Plan prevents as much as possible going into specific implementation details of the programs and initiatives identified for execution. The premise is that, for each major program or initiative, these details will be developed and worked out within the context of a Project Implementation Document or Report during the actual implementation of the Plan, in order to take into account specific circumstances, constraints, opportunities and developments operating at the time. This approach will also allow for the fine-tuning of the program details as the need arises during the actual implementation of the Plan.

• Finally, a key guiding principle underlying the development of the NICI-2010 Plan is the concept of 'decentralization-and-localization' of the implementation, monitoring and evaluation of the Programmes and Initiatives of the Plan. Instead of centralizing the implementation of the Plan, each Programme or Initiative of the Plan is associated with an Implementation Agency who takes the responsibility for its implementation monitoring and evaluation. The Plan Execution Coordinating Committee (PECC) of the Government Ministries and Public Sector Organizations, are to play a key role in this process.

### Components and the Presentation of the Details of the NICI-2010 Plan

The NICI-2010 Plan has ten pillars, each representing a sub-plan. The components of these sub-plans took the following into account:

1. The achievements and lessons learnt in relation to the implementation of the NICI-2005 Plan (as documented in Section 2.0).
2. The need to regard the NICI-2010 Plan as one of the four rolling-plans envisaged for implementing the provisions of the ICT4D Policy within the time-frame of the *Vision 2020*.
3. The guiding premise, principles and other specific requirements for developing the details of the Plan as documents above.
4. The various stakeholder contributions and inputs generated during the consultative process on the Plan.

### On the Structuring of the NICI-2010 Sub-plans

1. The NICI-2010 Plan is structured in terms of sub-plans with each sub-plan representing a pillar of the

Figure 1: The Pillars of the Plan



Plan. For each of these sub-plans, the relevant *Vision for Rwanda* (VfR) missions are documented as well as the relevant ICT4D Policy commitments of the Government and the Relevant ICT4D Policy Expectations. Also documented for each sub-plan are a number of policy action items aimed at implementing the relevant ICT4D Policy intentions and commitments of the Government.

2. The Planned Actions designed for the realization of

the Government's ICT4D Policy intentions and commitments are documented for each of the sub-plans. Each of these Planned Actions has associated with it a due date or a time-bound measurable target (TBM). To complete the process, corresponding implementation agencies are identified for each of the Planned Actions.

3. Some of the Planned Actions have associated with them Prerequisites and linkages. The Prerequisites define what needs to be done before a specific Planned Action can be implemented while the linkages links the Planned Action with other Planned Actions within the NICI-2010 Plan.

4. Also documented for each of the Planned Actions is an indication of its relation to a particular roll-over NICI-2005 plan-action. Some of the NICI-2010 Planned Actions are completely new while a number correspond to the implementation of a roll-over plan-action from the NICI-2005 Plan. Also, a number of the NICI-2010 Planned Actions are described as either equivalent or corresponding to a particular NICI-2005 roll-over plan-action(s) or represent an aspect of a particular roll-over plan-action.

5. The details of the NICI-2005 Plan roll-overs into the NICI-2010 Plan are also documented for each sub-plan. These details include the relevant roll-over plan-actions for each of the relevant programs and initiatives of the NICI-2005 Plan, the revised time-bound measurable targets of these plan actions, the relevant implementation agencies, as well as the implementation status of each of the plan-actions.

6. Finally, each of the sub-plans is analyzed in terms of how they relate to the *Vision for Rwanda* (VfR) Mission Strategies and to what extent their implementation will contribute to the realization of the Government of Rwanda's (GOR) multi-sectoral economic development policy and the ICT-2020 Policy. Given that the ultimate objective is to transform Rwanda's economy and society into an information-rich and knowledge-based society and economy (IKE), the contribution that the implementation of the Planned Actions of each of the sub-plans will make towards the development of the IKE is also considered. The achievement of the specific goals of developing the IKE constitutes the developmental benefits that Rwanda will derive from implementation of the initiatives of the relevant sub-plans. The risk factors associated with the implementation of each of the sub-plans are also considered.

## THE SUB-PLAN FOR ICTS IN EDUCATION

### Summary of National Strategy and Policy Linkages of the Sub-plan

#### Relevant Vision for Rwanda (VfR) Mission Strategies

- To transform Rwanda into an IT-literate nation.
- To transform the educational system using ICTs with the aim of improving accessibility, quality and relevance to the development needs of Rwanda.
- To improve the human resource development capacity of Rwanda to meet the changing demands of the economy.

#### Relevant Government Policy Commitments

##### *Commitment to the Deployment and Exploitation of ICTs in the Educational System*

The GOR acknowledges the key role that ICTs can play in educational delivery and training and the need for ICT training and education in schools, colleges and universities. The Government further acknowledges the role that ICTs can play in literacy education and the need to improve the educational system as a whole. The GOR is therefore committed to the rapid deployment, utilization and exploitation of ICTs within the educational system from primary school upwards. In this respect the GOR will be initiating a comprehensive program for the deployment and exploitation of computers in schools, colleges and universities.

##### *Commitment to the Establishment of ICT Specialist Institutions*

The GOR acknowledges the need for the establishment of a specialist ICT training institute for Rwanda. The GOR is therefore committed to facilitating the establishment of the proposed Regional Information Technology (IT) Institute in Rwanda. The Government acknowledges that Rwanda's bilingual status makes it an ideal country for such an institution, which could attract both English and French speaking students from the region and beyond.

#### Relevant ICT4D Policy Expectations

- Contribute to the development of the national human resource capacity to meet the changing demands of the economy.
- Contribute to the development and implementation of e-Government and e-Commerce in Rwanda.



#### Policy Action Items

To implement its ICT4D Policy intentions in the area of education within the context of facilitating the development of the Rwanda information and knowledge-based economy and society, the Government is committed to implementing specific Planned Actions targeted at achieving the objectives and goals of the following policy action items:

##### *Policy Action Item 1: Use ICTs for Formal Education*

- Modernize current curricula to exploit ICTs for learning purposes.
- Initiate drives to identify already developed educational content earmarking it for localized content.
- Encourage and make more affordable the access of educational institutions to the Internet.
- Encourage the development of Rwanda's specific e-Learning and computer-based training (CBT).
- Support the proliferation of virtual universities and educational institutions.
- Promote the use of educational websites that provide support to formal education.
- Encourage and foster ICT R&D through the establishment of a university portal or network.

##### *Policy Action Item 2: Use ICTs for Informal Education*

- Strengthen public libraries and reading places, assisted by ICTs, to develop reading and information-seeking behavior of the society.
- Support and encourage the development of e-Learning and CBT for informal educational subjects.
- Encourage the development of locally relevant informal educational material.
- Encourage the use of ICTs to encourage lifelong learning.
- Promote the use of citizen guides in various areas as part of general education and knowledge (legal, medical, education and other issues).
- Use radio and TV for the improvement of informal educational levels.

##### *Policy Action Item 3: Improve Formal Education in ICTs*

- Spread the learning of ICTs at all educational levels: primary, secondary, vocational training and university.
- Identify the required ICT literacy levels for various educational levels.
- Develop training schemes for teaching ICTs to teachers.
- Encourage the international community and the private sector to support the development of local and national ICT educational institutions.
- Encourage Civil Society to support and finance the formal education of ICTs.
- Encourage the use of already established ICT training material to avoid the local redevelopment of the same.
- Distribute the task of ICT training outside the current educational establishment, at least in its early stages. This is because the educational establishment is currently not ready to learn and transfer its knowledge to students in schools and universities.
- Encourage and support ICT training institutes through promotion, incentives and exemptions.
- Encourage the involvement of the ICT sector in formal ICT education.
- Encourage continued ICT education and professional development.
- Encourage the introduction of certification and the accreditation of institutes that provide certification training.
- Seek financial assistance for formal ICT education.

##### *Policy Action Item 4: Improve Informal Education in ICTs*

- Improve informal ICT skills for citizens through media such as radio and TV.
- Raise awareness of the importance of informal ICT education through e-Learning, the web and computer based training (CBT).
- Encourage civil society to support and finance the informal education of ICTs.
- Provide wider content of relevance to Rwanda and the region.
- Encourage ICT certification in academia and training institutes.
- Encourage ICT training institutes by providing them with incentives, connecting them with international firms having similar objectives, and involving them in national training requirements.

- Seek financial assistance for informal ICT education.
- Expose children to ICTs from an early age.

*Policy Action Item 5: Raise Public Awareness of ICTs*

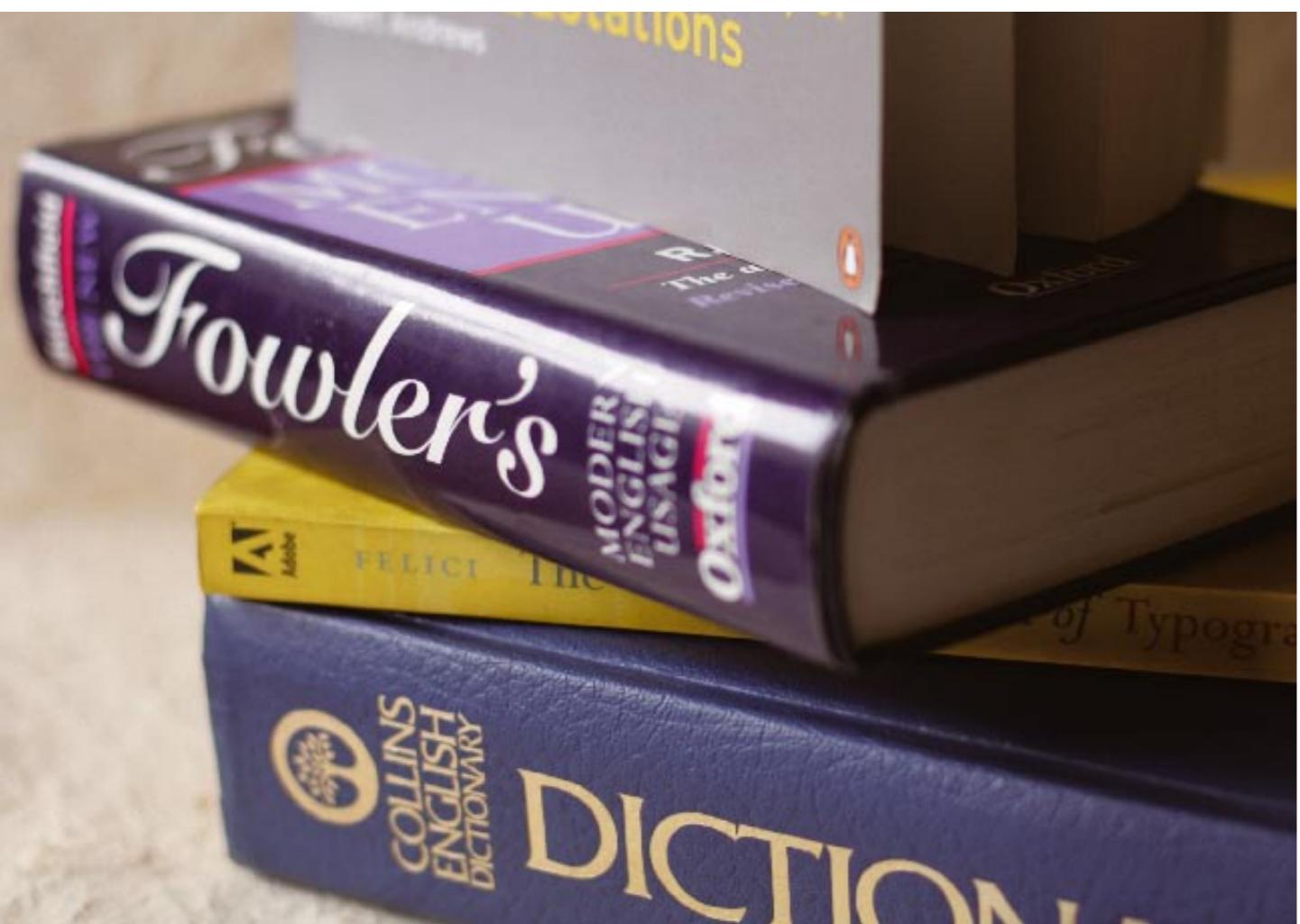
- Encourage the media to allocate time for news about general technological development, ICT educational programs and ICT progress in Rwanda.
- Encourage national awards in ICTs and related technologies.
- Host regional ICT exhibitions and conferences.
- Maintain a constant vigil on the benefits already reaped by ICTs for social and economic development.

*Policy Action Item 6: Help Educational Institutions Improve their Business Processes*

- Enhance SchoolNet and similar projects, and include all private and public schools as well as improve the service delivery of the network.
- Improve managerial skills of administrative personnel in educational institutions.
- Promote a mutually beneficial exchange between Academia, Civil Society and the private sector which will be beneficial to all.

*Policy Action Item 7: Promote Research and Development*

- Encourage the start-up of R&D centers both in Academia and outside it.
- Encourage the set up of technological incubators.
- Encourage the set up of technological competence centers.
- Develop partnerships between the private sector and Academia.
- Improve the level of advanced material in public libraries.



## PLANNED ACTIONS

### EDU-2.01: Train Primary and Secondary School Teachers on ICTs in Education

Type	Training Projects
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	This Planned Action is an aspect of E6.1, E6.2, E6.3 and E6.4 of the NICI-2005 Plan.  E6.1: The Ministry of Education to commission the development of a project proposal for a six month <i>Train-the-IT Teachers (TITT) Certificate Program in Basic Computing and Computer Studies</i> E6.2: The Ministry of Education to identify training institutions to implement the TITT Project E6.3: Ministry of Education to implement the <i>Train-the-Teachers (TITT)</i> program on a phase-by-phase basis to train a critical mass of computer-literacy teachers (CLTs) E6.4: Teacher training colleges, universities and other colleges providing teacher training education programs to make Computer Studies and Basic Computing an integral and compulsory subject of these programs
Planned Action Due Date	Fourth quarter 2010
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> <ul style="list-style-type: none"><li>• Facilitate equitable access to technology resources for all students</li><li>• Ensure that school syllabi include balanced ICT content</li><li>• Ensure that schools have sufficient computing capacity</li></ul> <i>Linkages:</i> None
Planned Action Ownership	Kigali Institute of Education (KIE)
Implementation Agencies	MINEDUC in collaboration with National Curriculum Development Centre, secondary school teachers, primary school teachers

#### Planned Action Details

##### Purpose:

This Planned Action has a dual purpose. First, to ensure that primary and secondary school teachers are competent enough in ICTs to be able to teach it to their students. Secondly, to ensure that teachers are knowledgeable enough in ICTs to use it to enhance their teaching skills.

##### Description:

As ICT is introduced in the school syllabi, it is important to reduce the dependence on ICT trainers by increasing the competence of teachers in ICTs. Training teachers in ICTs skills and the ICT syllabus in primary and secondary schools ensures that they transfer this knowledge to their students as part of their day-to-day instruction.

Teachers need training not only in computer literacy but also in the application of various kinds of educational software in teaching and learning. Furthermore, they need to learn how to integrate ICTs into their classroom activities and school structure.

Secondly, teachers must be competent enough in ICTs to ensure that they can exploit it to enhance their material, presentation, research, knowledge gathering, administration of students and other areas where ICTs can be of use. This knowledge will be "informally" transferred to students as well.

Teachers will be taught the following:

##### 1. Basic PC Operations

- Understanding of the functions of the various components of the computer.
- Use of a variety of office productivity software.

- Information retrieval through the use of CD-ROMS and other commercial programs.
- Use of graphic and illustration tools.
- Desktop publishing.

## 2. Information Technology

- Developing and using multimedia presentations.
- Developing interactive presentations.
- The ability to use the Internet for research and knowledge gathering.
- The use of e-mail.
- The creation of user groups.
- Awareness of overall developments in ICTs and of their potential to facilitate student learning.

## 3. Evaluation of Software

- The ability to select and evaluate technology-based learning materials.
- The ability to determine underlying pedagogical assumptions, gender and ethnic bias, educational relevance, social impact, and suitability for the classroom environment, for cooperative learning and for peer interaction.
- Generate lesson plans.
- Match computer applications to specific curriculum content and processes.
- Evaluate computer software for educational purposes.
- Structure subject programs and lessons to incorporate useful and appropriate computer activities.
- Evaluate student learning from computer-based activities.

## 4. Pedagogical Issues – Classroom Management, Learning Theories, Learning Styles

- Understanding of how computer technology can enhance student learning and help learners explore their world.
- The creation of self-regulating learning environments.
- The management of the classroom environment and school resources.
- The ability to use computers for student profiling and reporting, lesson preparation and class/faculty administration.

## 5. Values and Ethics

- Identifying and recognizing plagiarism.
- Understanding and respecting the issues of copyright, censorship and privacy.
- Recognizing the issues of appropriate access to and verification of information gained from such sources as the Internet.
- Interpersonal skills for working in environments where colleagues have a wide range of abilities in using the new technologies.

### Benefits of the Planned Action:

- More efficient instruction leads to better educational results.
- New roles for teachers as facilitators and guides, not simply as lecturers or instructors.
- Active participation of teachers and collegial learning.

### Current and On-going Work:

Evaluation in Progress.

### Risks:

- Teachers who are scared of technology will reduce their own involvement in it.
- Well-trained teachers but insufficient ICT facilities.
- Students with insufficient ICT facilities.
- The involved universities remain under-equipped.

### Budgetary Estimate:

Category D (between US\$800,000 and US\$1,000,000)

### Schedule:

- Phase 1: Ensure that the ICT syllabus is well balanced through a major thrust by the Ministry of Education (one year).
- Phase 2: Prepare a plan for educating teachers (three months).
- Phase 3: Conduct teacher training workshops over the next three years.

## EDU-2.02: Scholarship Management Program

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> GOV-2.09: Implement a National ID and Smartcard system
Planned Action Due Date	Fourth quarter of 2006
Planned Action Ownership	Ministry of Education (MINEDUC)
Implementation Agencies	MINEDUC in collaboration with: SFAR; National Curriculum Development Center; RITA; universities and colleges

### Planned Action Details

#### Purpose:

To manage the scholarships offered by the Ministry of Education through the Student Financing Agency for Rwanda (SFAR) to deserving students. These scholarships are offered as school loans that have to be paid back to SFAR, thereby making SFAR a sustainable operation.

#### Description:

This Planned Action will integrate with the Smart Government environment to benefit from the National ID system and cross-check applicant identification information. In addition to managing applications and the financial aspects of the loans, this Planned Action will provide employment support.

#### Benefits of the Planned Action:

- The Ministry of Education's SFAR Agency will be able to process applicants faster, and follow up consistently.
- Applicants will have on-line access to submit and follow up on their applications, ensuring transparency and lowering management overheads.
- Contributes towards creating a transparent process of allocating scholarships to Rwandan students.

#### Current and On-going Work:

A private sector partner (e-Tools Rwanda) was engaged in October 2005, and a proof-of-concept has already been established. The full development and deployment of the Planned Action is on hold pending the availability of funding.

#### Risks:

The lack of project funding.

#### Budgetary Estimate:

Category A (Less than US\$200,000)

### Schedule:

- Phase 1: Design and implementation (three months).
- Phase 2: Implementation review and handover to SFAR (one month).
- Phase 3: Deployment of applications.

**EDU-2.03: Rwanda National Library Network**

Type	Material Projects
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	<b>This Planned Action is an aspect of C3.3 of the NICI-2005 Plan</b> <b>C3.3:</b> National Electronic Libraries and Archive (NELA) Project. The NELA Project is made up of two initiatives, namely: the Rwandan Electronic Library Initiative (RELI) and the National Electronic Archive Project (NEAP).
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> <ul style="list-style-type: none"><li>• Finding the right entity to govern such a project is a major concern even though the Ministry of Education or the Ministry of Youth and Sports (which covers Culture as well) are the most likely candidates</li><li>• The Post Office, through its national coverage, can act as the delivery vehicle</li></ul> <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2010
Planned Action Ownership	Ministry of Education (MINEDUC)
Implementation Agencies	MINEDUC in collaboration with all Ministries and Agencies, universities and colleges, Multipurpose Community Telecenters, IPOSTA.

**Planned Action Details**
*Purpose:*

To establish a National Library Network allowing improved and increased access to the various libraries in Rwanda.

*Description:*

Public libraries in Rwanda are not very common. University libraries are available and are of a reasonably good standard. However, all these libraries suffer from several issues:

- Lack of funding.
- Not being up-to-date.
- Not having a sufficiently wide range of material.
- Limited to traditional library material such as books and journals.
- Lack of coordination amongst the libraries.
- Restricted access.

Libraries play a key role in any society. They are the basis of informal and formal education drives. In many instances, libraries become the center for other activities such as listening to music, lectures, and recently, web access points.

Libraries need to modernize and widen the scope of their facilities and services to include the following:

- Internet access.
- Electronic databases.
- On-line search for and reservation of books between different libraries.
- Access to e-books and journals.
- On-line tutorials and training (e-Learning).
- Web forums for individuals and organizations working on similar projects.
- Knowledge management to provide information on new material, events and library usage techniques.

Thus there is the need to invest in the development of a National Library Network that allows the following:

- Improving the technologies used in libraries for better control and more flexible usage (barcode reading, automated lending systems, etc.).
- Coordination between different libraries allowing exchange of books required by subscribers in different locations.
- Wider access so that individuals or institutions outside a university or organization can use its libraries.

- Support for mobile libraries by the lending of books of suitable content for the readers of such libraries.
- Integrate and enable access to the information stored in the various databases being developed in Rwanda, and through many of the proposed Planned Actions.

*Benefits of the Planned Action:*

- The public will be served by providing it with a wider variety of reading material.
- The Planned Action provides a major benefit to universities as they will be able to share their library material.
- This will encourage both formal and informal learning.
- The Planned Action will reduce the educational divide by providing educational and training material to underprivileged segments of the society.

*Current and On-going Work:*

Universities have good libraries but they are not integrated.

*Budgetary Estimate:*

Category E (between US\$1 million and US\$3 million)

*Schedule:*

- Phase 1: Establish the entity that shall govern and coordinate the various activities of this network (around two months).
- Phase 2: Coordination phase. Identify the various parties to be involved in the network. Establish an inventory of material to be acquired. Define the coordination and integration modes of the various libraries (around four months).
- Phase 3: Develop any technological Planned Actions required for the network – websites, reservation systems, transfer of material, repositories, etc. (around six months).
- Phase 4: Commence with the acquisition of off-the-shelf products and services.
- Phase 5: Commence with the development of customized technologies.

**EDU-2.04: Develop New e-Learning Content**

Type	Development Projects
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	<b>This Planned Action is an aspect of E9.4 of the NICI-2005 Plan</b> <b>E9.4:</b> Ministry of Education to launch an “EDE-in-Schools” Program to promote the use of the resources of the Internet by schools to avail of relevant educational materials and facilities (e.g. electronic libraries, books, learning and teaching materials) to facilitate and compliment teaching and learning in Rwandan schools
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2010
Planned Action Ownership	Ministry of Education (MINEDUC)
Implementation Agencies	MINEDUC in collaboration with the National Curriculum Development Center; RITA and the Kigali Institute of Education (KIE)

**Planned Action Details**
*Purpose:*

e-Learning has become an essential instructional tool. Its success is highly dependant on the developed content. There are two sources for such content – ready made courses and courses developed by teachers. This Planned Action stresses the need for teachers to develop their own content. Much of their effort can be supplemented by ICT vendors in the private sector. However, it is teachers who are intended to drive the thrust.

**Description:**

There is no need to reinvent the wheel. Many e-Learning courses can be imported and used as is. However, there is a fair amount of learning that is Rwanda specific and that needs to be developed locally. To avoid the high cost of development in the west or in other software intensive areas, Rwanda needs to encourage and train its teachers in the techniques of e-Learning content development.

The audience for such material is everyone. This includes the population in remote areas and the disadvantaged that are on the lower side of the digital divide – the poor, the rural areas, the young and the old. Developing e-Learning sites and CBT material would cover such a lack. The material can be broken down into several categories:

- Material to cover formal education such as language learning, vocational material, primary school material to interest children, etc.
- Material to cover general knowledge related to Rwanda such as history, geography, cultural and heritage material, social and economic reviews, etc.

The material can be disseminated through the following channels:

- CD-ROM
- Website interactive form
- Packaged with donated PC kits
- Installed in Multipurpose Community Telecenters

Note that traditional non-electronic channels such as TV and radio programs may also be used to expand the reach of the content.

The Planned Action requires the following activities:

Step 1: Identify or set up an entity that will be responsible for the e-Learning content development project. Its purpose will be to support the teachers, plan their activities and ensure that through coordination, standards and guidelines are made available to the overall project.

Step 2: Identify the required content. This survey should be conducted with two objectives. First of all, identify the total e-Learning required content. Secondly, identify the subset that needs to be developed for and in Rwanda because it is not available elsewhere. Once a fundamental set of courses is identified, the project can be assessed further for its timing and costs.

Step 3: Identify and standardize the development platform for e-Learning. There is a wide variety of platforms that can be used to develop e-Learning content. It is critical to standardize on the tools to be used. This will reduce acquisition and training costs.

Step 4: Training the teachers. The entity identified in Step 1 will first need to train its own trainers. These will be responsible for training the teachers on the e-Learning development tools. The training will also involve guidelines on structuring courses and preparing content and presentation skills. Course management is also to be built into the content so that teachers can follow the progress of students, grade them and provide them with guidance.

Step 5: Prepare a project plan that aims at developing the contents as identified in Step 2. The plan will group the e-Learning unit with the teachers and prepare subprojects for each course.

**Benefits of the Planned Action:**

- e-Learning content can be exported.
- e-Learning can be used in Community Telecenters for non-formal educational purposes.
- Standardizing the Planned Actions reduces costs of training and learning.
- Identifying requirements reduces the cost of duplicated effort and improves the quality of content

**Risks:**

- The main challenge of this Planned Action is the task of selecting and developing the technologies and the subject matter.
- Another risk is that councils and committees may dilute any initiatives and delay the process.

**Budgetary Estimate:**

Category D (between US\$800,000 and US\$1,000,000)

**Schedule:**

- Phase 1: Establish the Entity (around two months).
- Phase 2: Identify the required content. This survey should take around four months.
- Phase 3: Identify and standardize the technological platforms. This should be carried out in parallel with Phase 2 and should take around four months.
- Phase 4: Training the teachers. This should be an on-going process conducted over two to three years.
- Phase 5: Prepare a project plan that aims at developing the contents as identified in Phase 2. This should be developed in parallel with Phase 3. It should take around two to three months.

**EDU-2.05: Implement Educational Management Information Systems (EMIS)**

Type	Development Projects
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	This Planned Action is an aspect of G3.3 of the NICI 2005 Plan <b>G3.3:</b> Each Government Ministry or PSO to identify and develop for its specific use relevant computer-based applications, information and database systems to support its administrative and service delivery activities
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> IEC-2.02: The National GIS Centre
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Education (MINEDUC)
Implementation Agencies	MINEDUC in collaboration with universities and colleges

**Planned Action Details****Purpose:**

To provide the central and decentralized levels with adequate data and user-friendly computerized tool which would facilitate planning, reporting and monitoring across the sector for all levels of education (pre-primary up to higher education). In addition, this Planned Action is to build capacity at central and decentralized levels in Information Technology and in use for policy decision-making, planning, monitoring and management purposes.

**Description:**

The Planned Action creates automated school and student management systems. Yet, since these systems may be available for some and not for all, they must be able to exchange data with the various educational institutions both electronically and manually. The Planned Action is to ensure:

- Reliable education/indicators produced by the EMIS. The education data produced is to be used by all schools and at sector, district, province and central levels.
- Usage of GIS maps to relate indicators to geographical locations.

**Benefits of the Planned Action:**

- Timely information/statistics for decision making and monitoring.
- The Planned Action will have an impact on other sectors that require educational information.

**Current and On-going Work:**

- Integrated computerized EMIS-GIS is physically implemented in at least 12 Provincial Directorates of Education and about five pilot districts.
- At least three staff in each Provincial Directorate of Education and at least the District Inspector in pilot districts are fully trained on the computerized EMIS-GIS.

- The schools/high level Institutions and the Planning Unit of the Ministry of Education get reliable education data from the EMIS-GIS.

**Risks:**

Maps should be used as developed in the related Planned Action for GIS base maps. Otherwise, effort will be wasted and duplication will increase costs.

**Budgetary Estimate:**

Category D (between US\$800,000 and US\$1,000,000)

**Schedule:**

Phase 1: Define the required data (three to four months).

Phase 2: Define the mechanisms needed to collect the data from the educational institutions (six months).

Phase 3: Develop the software applications needed to process the data and interface it with GIS (six months).

Phase 4: Integrate the systems by implementing the data collection in all institutions.

**EDU-2.06: Survey Educational Software**

Type	Consulting Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	Ministry of Education (MINEDUC)
Implementation Agencies	MINEDUC in collaboration with Rwanda ICT Associations

**Planned Action Details****Purpose:**

To identify educational software for use in Rwanda in its original language or for the purpose of translation into Kinyarwanda. Such software can be for formal and informal education (including ICTs).

**Description:**

Developed countries have already gone a long way towards the development of Computer Based Training (CBT) and the development of e-Learning material. It is therefore recommended to benefit from their work for use in Rwanda.

Such material covers the following educational areas:

- Formal education as a support to school and university curricula.
- Informal education.
- ICT training.

This Planned Action is an on-going survey that aims at the identification of such products and the assessment of their suitability to Rwanda. The database to be developed for such a list will contain information about the material, its source, pricing and availability.

Once found suitable, other initiatives or Planned Actions can benefit from such a database.

**Budgetary Estimate:**

Category A (Less than US\$200,000)

**EDU-2.07: Convert Existing Computer-Based Training and e-Learning Content to Kinyarwanda**

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Education, Science, Technology and Scientific Research (MIN-EDUC)
Implementation Agencies	MINEDUC in collaboration with Ministry of Infrastructure

**Planned Action Details****Purpose:**

To provide the rural population with access to educational content in Kinyarwanda.

**Description:**

This Planned Action depends on two other Planned Actions:

- Converting ICT equipment and Planned Actions to host Kinyarwanda.
- Surveying educational software.

With the results completed, it becomes natural to start converting such content into Kinyarwanda.

The project is crucial and should be one of the first to be implemented. This will provide suitable content as well as engage the ICT sector.

**Budgetary Estimate:**

Category D (between US\$800,000 and US\$1,000,000)



## PLANNED ACTIONS ROLLED OVER FROM THE NICI-2005 PLAN

EDUC-1: Program to Promote the Acquisition of Computer Equipment by Educational Institutions	
Program Ownership	Ministry of Education
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To transform Rwanda into an IT-literate nation</li> <li>• To promote universal computer literacy in the school system of Rwanda</li> <li>• To improve the quality, accessibility and relevance of education to national developmental needs</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To assist the process of introducing computers into the primary and secondary schools</li> <li>• To assist the process of computerization and computer facility upgrade in the universities and colleges</li> <li>• To make computers and their products affordable and accessible to educational institutions to facilitate their role in human resource development</li> <li>• To make computers and their products affordable to NGOs involved in education, human resource development, community-based social and economic empowerment projects and initiatives</li> <li>• To make the funding of computer acquisition components of Donor-support Educational Projects affordable to the relevant Funding Organization and Agencies</li> </ul>

E1.1

*Plan-Specific Actions:* Implement tax policy instruments to facilitate the importation of computers and other ICT equipment at special low import duty rates targeted at the universities, colleges, and schools.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Reduce Import and Excise duties on computer products to zero by 2007 – targeted at universities, colleges and schools.

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning

*Status:* Work in progress.

E1.2

*Plan-Specific Actions:* Implement a tax policy initiative targeted at Donor Agencies and NGOs implementing education-related projects to import computer equipment and other related products at special low import duty rates.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Reduce import and excise duties on computer products to zero rates by 2007 – targeted at Donor Agencies and selected educational NGOs.

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning

*Status:* Work in progress.

E1.3

*Plan-Specific Actions:* Implement a National “Computers for Schools” Scheme to make it obligatory for Government Ministries, Agencies and Public Sector Organizations (PSOs) to donate their used computers to primary and secondary schools.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Put in place and implement by the fourth quarter of 2006 guidelines and directives to facilitate the donation of used computers to schools by Government Ministries, Agencies and other PSOs.

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning in collaboration with Ministry of Public Service, Skills Development and Labor  
*Status:* Work to start.

E1.4

*Plan-Specific Actions:* Put in place an “Adopt-and-Sponsor a School” initiative to encourage businesses within the private sector, Civil Society Organizations (CSOs) and International and Donor Agencies (IDAs) operating in Rwanda to adopt schools with the aim of providing them with new and used computers and other educational facilities and resources on a periodic and sustained basis.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The Ministry of Education to launch the “Adopt-and-Sponsor a School” initiative by the second quarter of 2007. *Note:* The Ministry of Education to publicize the initiatives and encourage targeted organizations to participate.

*Planned Action Implementation Agency:* Ministry of Education with the private sector, CSOs and (IDAs)

*Status:* Work in progress.

## EDUC-2: Computers in Schools – “Operation ICT Knowledge for the Youth” Program

Program Ownership	Ministry of Education
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To transform Rwanda into an IT-literate nation</li> <li>• To promote universal computer literacy in the school system of Rwanda</li> <li>• To improve the quality, accessibility and relevance of education to national developmental needs</li> <li>• To promote the use of ICTs in literacy education</li> <li>• To improve the human resource development capacity of Rwanda to meet changing demands of the economy</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To introduce computers into Rwandan primary, secondary, vocational and technical schools</li> <li>• To introduce computer literacy and basic computing as compulsory subjects into all Rwandan secondary, vocational technical schools and teacher training colleges</li> <li>• To make computer education an integral part of the educational system at the school levels</li> <li>• To prepare Rwandan school children for university and college level education in computer-related programs</li> <li>• To prepare Rwandan youth to embark on ICT-related career</li> </ul>

E2.1

*Plan-Specific Actions:* Ministry of Education to develop a comprehensive policy on Computer Education in Schools.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Develop a comprehensive policy on Computer Education in Schools by the fourth quarter of 2006.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work to start.

E2.2

*Plan-Specific Actions:* Ministry of Education to develop and implement a detailed Plan for the deployment of computers in schools.

*Prerequisites:* Ministry of Education policy on Computer Education in Schools (as per E2.1)

*Planned Action Linkages:* E2.1

*Time-Bound Measurable Targets:* Ministry of Education to develop and implement a detailed Plan for the deployment of computers in schools by the fourth quarter of 2006. The student-computer ratio in the schools should be ten-to-one (or better) by 2010.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work to start.

### E2.3

*Plan-Specific Actions:* Ministry of Education to develop and implement a program for setting up Mobile Computer Laboratories (MCLs) for schools. *Note:* This initiative will involve the acquisition of buses or vans and equipping them with computers and other necessary equipment to serve as MCLs.

*Prerequisites:* Ministry of Education policy on Computer Education in Schools (as per E2.1)

*Planned Action Linkages:* E2.1

*Time-Bound Measurable Targets:* All rural Prefectures depending on size and number of schools should be served by at least three MCLs by 2010. Urban Prefectures depending on size and number of schools should be served by at least two MCLs by 2010.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work to Start.

## EDUC-3: The National SchoolNet Project

Program Ownership	Ministry of Education
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To transform Rwanda into an IT-literate nation</li> <li>• To promote universal computer literacy in the school system of Rwanda</li> <li>• To promote and facilitate the rapid deployment and utilization of ICTs in the school system</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To provide access to the Internet in Rwandan schools</li> <li>• To promote and facilitate the spread of the Internet in Rwandan schools</li> <li>• To expose Rwandan school children to the Internet technology and educate them on its usage</li> <li>• To promote and facilitate the use of the educational resources of the Internet to support and facilitate teaching and learning in Rwandan schools</li> <li>• To promote and facilitate the implementation of Electronic Distance Education (EDE) within the Rwandan school system, using the resources and the educational development and delivery infrastructure of the Internet to complement and supplement face-to-face education and learning experience of Rwandan children</li> <li>• To link Rwandan schools with schools in other parts of the world to facilitate knowledge acquisition and exchange of educational experience on global scale</li> </ul>

### E3.1

*Plan-Specific Actions:* Set up a National SchoolNet Committee with membership from the Ministry of Education, Ministry of Youth and Sports, RITA, the private sector, national teachers organizations, parents organizations (e.g. PTAs), the proposed National Council for Computer Education (NCCE), and the proposed Institute for Computer Professionals of Rwanda (ICPR).

*Prerequisites:* None

*Planned Action Linkages:* H13.3, E5.4

*Time-Bound Measurable Targets:* Ministry of Education to set up the National SchoolNet Committee by the fourth quarter of 2006.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work to start.

### E3.2

*Plan-Specific Actions:* Ministry of Education to commission the development of the Rwandan SchoolNet Project Implementation Report. *Note:* This Project Report will, among other things, provide details of the project implementation plan; project costing and funding issues and the scheduling of project activities.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Commission and complete by the second quarter of 2007 the Rwandan SchoolNet Project Implementation Report and Plan.

*Planned Action Implementation Agency:* Ministry of Education and the National SchoolNet Committee

*Status:* Work to start.

### E3.3

*Plan-Specific Actions:* The Ministry of Education to launch the National SchoolNet Project.

*Prerequisites:* (i) The setting up of the National SchoolNet Committee. (ii) The Rwandan SchoolNet Project Report and Plan.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Launch the National SchoolNet Project by 2007.

*Planned Action Implementation Agency:* Ministry of Education and the National SchoolNet Committee

*Status:* Work in progress.

### E3.4

*Plan-Specific Actions:* Implement First Phase of the National SchoolNet Project to involve ten to 15 schools in about five rural and urban Prefectures. *Note:* Phase One of the SchoolNet Project constitutes the pilot phase of the Project.

*Prerequisites:* (i) The setting up of the National SchoolNet Committee. (ii) The Rwandan SchoolNet Project Report and Plan.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Launch Phase One of the National SchoolNet Project by 2007.

*Planned Action Implementation Agency:* Ministry of Education and the National SchoolNet Committee

*Status:* Work to start.

### E3.5

*Plan-Specific Actions:* Implement second phase of the National SchoolNet Project to involve ten to 15 schools in Prefectures not covered in the first phase of the Project.

*Prerequisites:* (i) The setting up of the National SchoolNet Committee. (ii) The Rwandan SchoolNet Project Report and Plan.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Launch Phase Two of the National SchoolNet Project by 2008.

*Planned Action Implementation Agency:* Ministry of Education and the National SchoolNet Committee

*Status:* Work to start.

### E3.6

*Plan-Specific Actions:* Implement the final phase of the National SchoolNet Project to involve all schools (if not the majority of schools) in all Prefectures.

*Prerequisites:* (i) The setting up of the National SchoolNet Committee. (ii) The Rwandan SchoolNet Project Report and Plan.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Launch the final phase of the National SchoolNet Project by 2010.

*Planned Action Implementation Agency:* Ministry of Education and the National SchoolNet Committee

*Status:* Work to start. "Vision for Rwanda"

**EDUC-4: National Public Awareness Program Targeted at Promoting the Vision for Rwanda (VfR) to Transform Rwanda into a Middle-income, Information-rich and Knowledge-based Society and Economy through the Implementation of ICT-led Socio-economic Development Policies and Plans**

Program Ownership	The Cabinet
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To mobilize the Rwandan public towards the realization of the missions and aspirations of the <i>Vision for Rwanda</i> (VfR)</li> <li>To promote the development of Rwanda into an information-rich and knowledge-based society and economy</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To raise the level of ICT awareness in the general public</li> <li>To educate the public on the role that ICTs can play in facilitating rapid socio-economic development and national prosperity</li> <li>To educate the public at home and abroad on the GOR's ICT Policies and Plans and on their role within the context of promoting the <i>Vision for Rwanda</i> (VfR)</li> </ul>

**E4.1**

*Plan-Specific Actions:* Launch a national weekly ICT Public Awareness and Literacy Program on radio and TV.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Launch the National ICT Public Awareness and Literacy Program on radio and TV by the fourth quarter of 2006.

*Planned Action Implementation Agency:* Ministry of Education and ORINFOR

*Status:* Work in progress.

**E4.2**

*Plan-Specific Actions:* Put in place an initiative to use the mass media, radio, TV and the print media, to inform and educate the public on the *Vision for Rwanda* (VfR) and the role that the GOR's ICT Policies, Strategies and Plans are going to play towards the realization of this Vision.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Launch by the fourth quarter of 2006 an initiative to inform and educate the public on the new *Vision for Rwanda* (VfR) and the role of ICTs in national development, wealth creation and national prosperity.

*Planned Action Implementation Agency:* GOR Information Service, RITA, ORINFOR and the private media.

*Status:* Work in progress.

**E4.3**

*Plan-Specific Actions:* RITA, in collaboration with the GOR Information Service, to organize regular public forums, meetings, seminars and workshops as a public awareness and education exercise on ICTs and the *Vision for Rwanda* (VfR).

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The GOR and RITA to start organizing public forums on educating the public on the new *Vision for Rwanda* from the fourth quarter of 2006.

*Planned Action Implementation Agency:* GOR Information Service, RITA and ORINFOR

*Status:* Work in progress.

**E4.4**

*Plan-Specific Actions:* Special Presidential Initiatives and Actions to promote and champion the *Vision for Rwanda* through the deployment, exploitation and development of ICTs to support Rwanda's rapid socio-economic development in the next 20 years.

*Prerequisites:* Cabinet approval of the GOR Integrated ICT Policy and the NICI-2010 Plan.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The President of Rwanda, in his capacity as the National ICT Champion, to take the following actions: Officially launch the GOR's Integrated ICTs for socio-economic development policy and the NICI-2010 Plan on radio and TV; launch the "ICTs for Development" Fund for Rwanda to raise money to support the implementation of the NICI-2010 Plan; chair a Donor's Conference in Kigali by the fourth quarter of 2006 to launch and kick-start the ICTfDev Fund initiative.

*Planned Action Implementation Agency:* Office of the President

*Status:* Work in progress.

**E4.5**

*Plan-Specific Actions:* Ministers, Senior Government Officials and other personalities regularly use the media and the opportunities provided by public meetings, press conferences and briefings, both at home and abroad, to refer to and promote the new *Vision for Rwanda* (VfR) and the role that ICTs will play as part of the Government's policy to transform the Rwandan society and economy.

*Prerequisites:* Cabinet approval of the GOR Integrated ICT Policy and the NICI-2010 Plan.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Initiate by the fourth quarter of 2006 the process of regular public briefings by Ministers, Senior Government Officials and other personalities on the new *Vision for Rwanda* (VfR) and the role of ICTs.

*Planned Action Implementation Agency:* Office of the President and Government Ministries

*Status:* Work in progress.

**E4.6**

*Plan-Specific Actions:* The Ministry of Foreign Affairs, through its diplomatic missions abroad, to publicize and promote the new *Vision for Rwanda* (VfR) and the role that ICTs will be playing as part of Government policy to transform the Rwandan society and economy. *Note:* This initiative is called "Image of Rwanda".

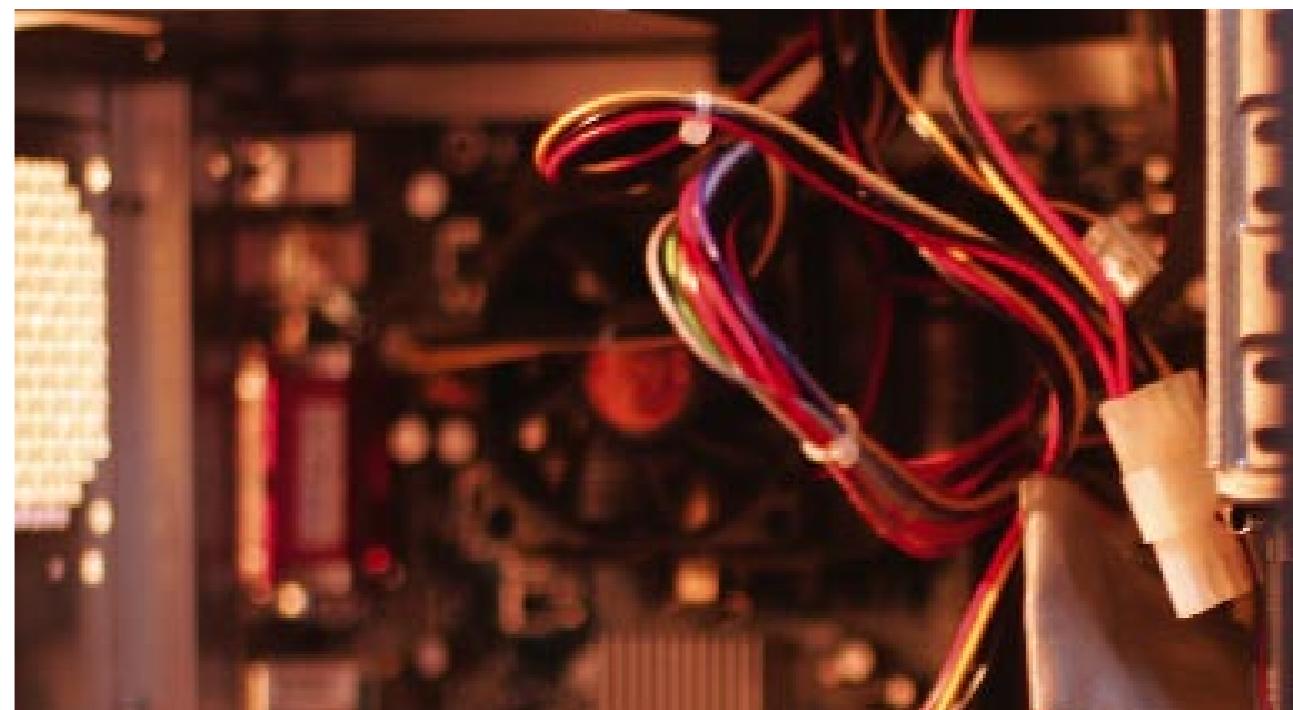
*Prerequisites:* Cabinet approval of the GOR Integrated ICT Policy and the NICI-2010 Plan.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Implement by the fourth quarter of 2006 the "Image of Rwanda" initiative focusing on promoting abroad the new *Vision for Rwanda* (VfR) and the role that ICTs will be playing as part of the Government policy to transform the Rwandan society and economy.

*Planned Action Implementation Agency:* Ministry of Foreign Affairs and Regional Cooperation

*Status:* Work in progress.



<b>EDUC-5: An Initiative to Develop a National Computer Curriculum for Primary and Secondary Schools and Coordinate Computer Education in Rwandan Schools</b>	
Program Ownership	Ministry of Education
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To transform Rwanda into an IT-literate nation</li> <li>• To promote the rapid deployment and utilization of ICTs in the Rwandan school system</li> <li>• To promote computer literacy as an integral part of the school system in Rwanda</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To develop a National Computer Education Curriculum for primary and secondary schools</li> <li>• To offer Computer Studies as a core course for the School Leaving Certificate Examination</li> <li>• To administrate, coordinate and manage computer education in Rwanda</li> </ul>

**E5.1**

*Plan-Specific Actions:* Ministry of Education to set up a Computer Curriculum Development Team to develop the national computer curriculum for primary and secondary schools.

*Prerequisites:* The Ministry of Education needs to put in place its policy on Computer Education in Schools.

*Planned Action Linkages:* E2.1

*Time-Bound Measurable Targets:* The National Computer Curriculum Development Team to be set up and complete its work by the fourth quarter of 2007.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work in progress.

**E5.2**

*Plan-Specific Actions:* The implementation of the Computer Curriculum in secondary schools on a phase-by-phase basis.

*Prerequisites:* (i) Introduction of computers into schools introducing the computer curriculum, hence the implementation of key elements of Program EDUC-1 and EDUC-2. (ii) The setting up of the National Council for Computer Education.

*Planned Action Linkages:* EDUC 1, 2, 3 and 4

*Time-Bound Measurable Targets:* Introduce the implementation of the Computer Curriculum in a selected number of schools in a selected Prefectures starting from 2007. Increase the number of schools implementing the Computer Curriculum by 50% by 2008 and ensure that the number of Prefectures covered also increase in number. Introduce the Computer Curriculum into all Rwandan schools by 2010.

*Planned Action Implementation Agency:* Ministry of Education and The National Council for Computer Education (NCCE).

*Status:* Work to start.

**E5.3**

*Plan-Specific Actions:* Ministry of Education to set up a Computer Education Examination Board to administer computer-based examinations at primary and secondary schools.

*Prerequisites:* The Ministry of Education needs to put in place its policy on Computer Education in Schools.

*Planned Action Linkages:* E2.1

*Time-Bound Measurable Targets:* The Computer Education Examination Board to be set up by the fourth quarter of 2007.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work to start.

**E5.4**

*Plan-Specific Actions:* The Ministry of Education to set up a National Council for Computer Education (NCCE) to serve as a permanent Working Group to advise on all matters relating to computer education in the country.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The National Council for Computer Education (NCCE) to be established by the fourth quarter of 2007.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work to start.

**EDUC-6: Program to Train a Critical Mass of Computer Literacy Teachers (CLTs)**

Program Ownership	Ministry of Education
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Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To transform Rwanda into an IT-literate nation</li> <li>• To promote the teaching of computer literacy in the Rwandan school system</li> <li>• To speed-up the process of the deployment and utilization of ICTs in the educational system</li> </ul>
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Program-Specific Goals	<ul style="list-style-type: none"> <li>• To train a critical mass of computer-literacy teachers (CLTs) to teach basic computing, computer literacy and Internet usage in the primary and secondary schools</li> <li>• To provide school teachers computer literacy and basic computing skills</li> <li>• To facilitate the process of spreading the usage of Internet technology in Rwandan schools</li> </ul>
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**E6.1**

*Plan-Specific Actions:* The Ministry of Education to commission the development of a project proposal for a six-month “Train-the-IT Teachers” (TITT) Certificate Program in Basic Computing and Computer Studies. *Note:* This Project Report will, among other things, provide details of the project implementation plan; project costing and funding issues, and the scheduling of project activities.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The “Train-the-IT Teachers” Certificate Program in Basic Computing and Computer Studies Project Report to be commissioned and completed by the fourth quarter of 2006.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work in progress.

**E6.2**

*Plan-Specific Actions:* The Ministry of Education to identify training institutions to implement the TITT Project.

*Prerequisites:* Train-the-IT Teachers Project Implementation Plan.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Complete identification of training institutions to implement the TITT Program by the fourth quarter of 2006.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work in progress.

**E6.3**

*Plan-Specific Actions:* Ministry of Education to implement the “Train-the-Teachers” (TITT) program on a phase-by-phase basis to train a critical mass of Computer Literacy teachers. *Note:* Based on the assumption that each primary and secondary school will have a CLT, then with  $n$  primary and secondary schools in the country (including projections for up to 2010), the critical mass of CLTs to be trained is  $n$ .

*Prerequisites:* Train-the-IT Teachers Project Implementation Plan

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:*

Phase 1: Train and deploy the first batch of  $n/3$  teachers by 2007.

Phase 2: Train and deploy the second batch of n/3 additional teachers by 2008.

Phase 3: Train and deploy the third batch of n/3 additional teachers by 2009.

Phase 4: Train CLTs annually thereafter to fill vacancies and to achieve the required critical mass of “one CLT per school” by 2010.

*Planned Action Implementation Agency:* Ministry of Education, universities and colleges

*Status:* Work in progress.

#### E6.4

*Plan-Specific Actions:* Teacher training colleges, universities and other colleges providing teacher training education programs to make Computer Studies and Basic Computing an integral and compulsory subject of these programs.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Education, by the fourth quarter of 2006, to issue and enforce a directive that will require teacher training colleges, universities and other colleges to make Computer Studies and Basic Computing an integral and compulsory subject within Teacher Training Education Programs.

*Planned Action Implementation Agency:* Ministry of Education, universities and colleges

*Status:* Work in progress.

#### EDUC-7: Program to Train Military Personnel in ICTs

Program Ownership	Ministry of Defense and National Security
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To transform Rwanda into an IT-literate nation</li> <li>• To promote universal computer literacy in Rwanda</li> <li>• To improve the human resource development capacity of Rwanda to meet the changing demands of the economy</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To train military personnel in various types of computer skills</li> <li>• To raise the level of computer literacy within the military service</li> <li>• To provide job creation, avenues and opportunities in ICTs for military personnel</li> <li>• To facilitate the process of spreading the use, deployment and utilization of ICTs in Rwanda</li> </ul>

#### E7.1

*Plan-Specific Actions:* Ministry of Defense and National Security to commission the development of a project proposal for a six-month Computer Training Program for serving, retired and demobilized military personnel.

*Note:* This Project Report will, among other things, detail the project implementation plan; and project costing and funding issues and the scheduling of project activities.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The “Computer-Skills for the Military” Certificate Program Report to be commissioned and completed by the fourth quarter of 2006.

*Planned Action Implementation Agency:* Ministry of Defense and National Security

*Status:* Work in progress.

#### E7.2

*Plan-Specific Actions:* Ministry of Defense and National Security in collaboration with the Ministry of Education to identify training institutions to implement the “Computer-Skills for the Military” Certificate Program.

*Prerequisites:* The “Computer-Skills of the Military” Project Implementation Report and Plan.

*Planned Action Linkages:* E7.1

*Time-Bound Measurable Targets:* Complete identification of training institutions by the fourth quarter of 2006.

*Planned Action Implementation Agency:* Ministry of Defense and National Security

*Status:* Work in progress.

#### E7.3

*Plan-Specific Actions:* Ministry of Defense and National Security to implement a Computer Training Program for military personnel on a phase-by-phase basis.

*Prerequisites:* The “Computer-Skills of the Military” Project Implementation Report and Plan.

*Planned Action Linkages:* E7.1, PRS-9

*Time-Bound Measurable Targets:* Starting from the fourth quarter of 2006, train batches of serving military personnel from the MOD Headquarters and other field units in basic computing and Internet usage. Starting from 2007, train batches of retired and demobilized military personnel to serve as computer teachers in schools and Drop-in-IT Centers for the youth and the unemployed. Starting from 2007, train a special corps of serving, retired and demobilized Military Personnel as computer technicians to install, maintain and repair computer systems in Government Ministries and PSOs and private sector organizations.

*Planned Action Implementation Agency:* Ministry of Defense and National Security

*Status:* Work in progress.

#### EDUC-8: National Program to Speed Up the Deployment, Exploitation and Development of ICTs in Higher Education Institutions

Program Ownership	Ministry of Education
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To transform Rwanda into an IT-literate nation</li> <li>• To develop and transform the young population of Rwanda into an asset by adding value to human resources and providing the environment for utilizing these resources for socio-economic development process</li> <li>• To promote and support R&amp;D initiatives in Rwandan research institutions, universities and colleges</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To make ICT an integral part of education and training in higher educational institutions</li> <li>• To improve the ICT-related human resource development capacities of higher Educational Institutions</li> <li>• To improve and upgrade the ICT resources and facilities of higher educational institutions</li> <li>• To encourage and facilitate ICT-related R&amp;D work in universities and colleges</li> <li>• To encourage and promote the setting up of campus companies/industrial facilities for ICT-related activities in universities and colleges</li> </ul>

#### E8.1

*Plan-Specific Actions:* Implement a program to set up Computer Science or Computing Departments in universities and colleges without these departments.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Universities and colleges without Computer Science or Computing Departments to set up one by 2008.

*Planned Action Implementation Agency:* Ministry of Education, universities and colleges

*Status:* Work in progress.

#### E8.2

*Plan-Specific Actions:* Implement a program to increase the annual intake of Computer Science, Computer Technology, Electronic and Electrical Engineering students in universities and colleges. *Note:* The Plan Implementation

Proposal for each institution will, among other things, provide details of the implementation plan including costing, resource and capacity requirements as well as funding issues.

**Prerequisites:** Each university and college will need to develop a proposal on how it will implement this action plan.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** The annual output of Computer Science, Computer Tech./Engineering, Electronic and Electrical Engineering graduates from the universities and colleges to be increased at an annual rate of 25-30% between 2007 and 2008. Universities and colleges to at least triple their output of Computer Science, Computer Tech./Engineering, Electronic and Electrical Engineering graduates by 2010.

**Planned Action Implementation Agency:** Ministry of Education, universities and colleges

**Status:** Work in progress.

#### E8.3

**Plan-Specific Actions:** Universities and colleges to equip all their departments with Computer Systems.

**Prerequisites:** Each university and college will need to cost this action plan.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Departments within all universities and colleges to have access to computers by 2007.

**Planned Action Implementation Agency:** Ministry of Education, universities and colleges

**Status:** Work in progress.

#### E8.4

**Plan-Specific Actions:** Universities and colleges, in collaboration with the Ministry of Education, to make computer education and training an integral part of all certificate, diploma and degree level programs in the first instance, and later on make Computer Course modules a compulsory component of all university and college level courses and programs.

**Prerequisites:** Each university and college will need to put in place a procedure for facilitating the implementation of this action plan.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Computer education and training to be made an integral component of all certificate, diploma and degree level programs at universities and colleges by 2007. Computer Course Module to be made a compulsory component of all diploma, degree and certificate courses and programs offered at all Rwandan universities and colleges by 2008.

**Planned Action Implementation Agency:** Ministry of Education, universities and colleges

**Status:** Work in progress.

#### E8.5

**Plan-Specific Actions:** Internet access to be made available to all staff and students at universities and colleges.

**Prerequisites:** Each university and college will need to cost this action plan.

**Planned Action Linkages:** E8.3

**Time-Bound Measurable Targets:** All Departments in universities and colleges to have access to the Internet by 2007.

**Planned Action Implementation Agency:** Ministry of Education, universities and colleges

**Status:** Work in progress.

#### E8.6

**Plan-Specific Actions:** Improve and upgrade the resources and facilities of the existing Computer Science, Computer Tech./Engineering and related Departments in universities and colleges.

**Prerequisites:** Each university and college will need to cost this action plan.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Improve and upgrade the resources and facilities of the existing Computer Science, Computer Tech./Engineering and related departments in universities and colleges during the time frame of NICI-2010.

**Planned Action Implementation Agency:** Ministry of Education, universities and colleges

**Status:** Work in progress.

#### E8.7

**Plan-Specific Actions:** Set up and make operational on a phase-by-phase basis the proposed Rwandan Academic & Research Network (RARN) linking all institutions of higher education into a Wide Area Network with a gateway to the Internet.

**Prerequisites:** Rwandan Academic Research Network (RARN) Project Implementation Report.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:**

Phase 1: Implement and complete the first phase of the RARN Project to link NUR, KIST, KIE and KHI by 2007.

Phase 2: Extend the RARN Project to link other higher institutions, including national research institutes and centers, by 2008.

**Planned Action Implementation Agency:** Universities and colleges

**Status:** Work in progress.

#### E8.8

**Plan-Specific Actions:** Universities and colleges to facilitate the setting-up of Campus Companies/Units or Industrial Facilities and Parks to serve as incubators for ICT-related production and service provision activities.

**Prerequisites:** Each university or college will need to develop a policy Statement to guide the setting-up and operations of Campus Companies, including STPs and other Industrial Facilities and Parks. **Note:** This policy provide guidelines on ownership arrangements and the obligations of the Campus Companies to the university or college; the contractual obligations and limitations of university or college staff working for these companies; the incubation period of these Campus Companies and their relationship with the university or college after the incubation period.

**Planned Action Linkages:** P3.2

**Time-Bound Measurable Targets:** Begin the setting up of ICT-related Campus Companies or Industrial Facilities in selected universities and colleges by 2007. Begin the setting up of Software Technology Parks (STPs) in selected universities by 2007. Universities and colleges to set up other campus companies during the time frame of NICI-2010.

**Planned Action Implementation Agency:** Universities and colleges, national research institutes.

**Status:** Work in progress.



**E8.9**

**Plan-Specific Actions:** Rwandan institutions of higher learning and national research institutes to implement a program aimed at promoting academic and research collaboration and twinning arrangements with international centers of excellence in ICT-related research, education or training. *Note:* Each university, college or national research institute should endeavor to establish collaborative and twinning arrangements with a number of external institutions during the time frame of NICI-2010.

**Prerequisites:** All universities, colleges and national research institutes will need to develop a policy statement to guide twinning arrangements with external institutions at the departmental and university or college level.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** At least two linkages with international centers of excellence in ICT to be established by each university, college or national research institute by 2008.

**Planned Action Implementation Agency:** Universities and colleges, national research institutes.

**Status:** Work in progress.

**E8.10**

**Plan-Specific Actions:** Universities, colleges and national research institutes to set up ICT R&D units/centers. *Note:* The universities, colleges and national research institutes will be required to vigorously promote and support the setting-up of R&D centers to encourage cutting-edge research and development work and attract research funding from local and international sources.

**Prerequisites:** Each university and college is to develop a policy on how it intends to promote and support R&D work in ICTs and other areas.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** ICT R&D units/centers to be set up in a selected number of universities and colleges by 2008. All universities and colleges to have R&D centers by 2010.

**Planned Action Implementation Agency:** Universities and colleges, national research institutes

**Status:** Work in progress.

**E9.2**

**Plan-Specific Actions:** Ministry of Education to launch a program to implement EDET in higher educational institutions using the Internet, educational and multimedia presentation and delivery technologies.

**Prerequisites:** The EDET in Higher Educational Institutions Project Report and Plan.

**Planned Action Linkages:** E9.1

**Time-Bound Measurable Targets:** Fast track universities and colleges to launch the implementation of EDET programs by 2007. All other universities and colleges to launch the implementation of EDET programs by 2008.

**Planned Action Implementation Agency:** Ministry of Education, universities and colleges

**Status:** Work in progress.

**E9.3**

**Plan-Specific Actions:** Universities and colleges to provide a selection of their courses and programs to the public by EDET using the Internet, educational and multimedia presentation and delivery technologies.

**Prerequisites:** The EDET in Higher Educational Institutions Project Report and Plan.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Fast track universities and colleges to offer their courses and programs to the public via EDET by 2008. All other universities and colleges to offer their courses and programs to the public via EDET by 2009.

**Planned Action Implementation Agency:** Universities and colleges

**Status:** Work in progress.

**E9.4**

**Plan-Specific Actions:** Ministry of Education to launch an “EDE-in-Schools” Program to promote the use of the resources of the Internet by schools to avail themselves of relevant educational materials and facilities (e.g. electronic libraries, books, learning and teaching materials) in order to facilitate and compliment teaching and learning in Rwandan schools.

**Prerequisites:** Ministry of Education policy on computer education in schools (as per E2.1)

**Planned Action Linkages:** E2.1, EDUC-3

**Time-Bound Measurable Targets:** Ministry of Education to launch the “EDE-in-Schools” Initiative by 2007.

**Planned Action Implementation Agency:** Ministry of Education

**Status:** Work in progress.

**E9.5**

**Plan-Specific Actions:** The Ministry of Education to launch the National Life-Long Learning Initiative (NLLI) to promote and facilitate the concept of life-long learning in Rwanda. *Note:* This initiative can be administered through selected universities, colleges and other institutions and training organizations or companies.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** (i) Ministry of Education to launch the NLLI by 2007. (ii) Put in place structures and mechanisms to implement the NLLI, starting from 2008.

**Planned Action Implementation Agency:** Ministry of Education, universities and colleges in collaboration with the National Labor Union and Employers Associations.

**Status:** Work to start.

**E9.6**

**Plan-Specific Actions:** The Ministry of Public Service, Skills Development and Labor to establish and make operational a National In-service Training and Skill Update Initiative via EDE for the Civil and Public Service.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** (i) Launch the National EDET-base In-service Training and Skill Update Initiative for the civil and public service by 2007. (ii) Start the implementation of the initiative within the civil service and PSOs by 2008.

**Planned Action Implementation Agency:** Ministry of Public Service, Skills Development and Labor in collaboration with the Rwandan Labor Unions and Associations.

**Status:** Work to start.

**EDUC-9: National Electronic Distance Education and Training (NEDET) Program**

Program Ownership	Ministry of Education
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To transform Rwanda into an IT-literate nation</li> <li>• To transform the educational system using ICTs with the aim to improving accessibility, quality and relevance to the development needs of Rwanda</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To supplement and complement campus-based education and training at all levels of the educational system</li> <li>• To promote and facilitate life-long learning experience in Rwanda</li> <li>• To promote, encourage and facilitate in-company and in-service training using the emerging educational delivery and electronic messaging technologies</li> </ul>

**E9.1**

**Plan-Specific Actions:** The Ministry of Education, in collaboration with the universities and colleges, to set up an ad hoc team to prepare a Project Report for the implementation of Electronic Distance Education and Training (EDET) in higher educational institutions.

**Prerequisites:** Ministry of Education to prepare a policy statement on EDET.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Set up the EDET Project Report Team by the fourth quarter of 2006. Commission and complete the EDET in Higher Educational Institutions Project Report and plan by the fourth quarter of 2006.

**Planned Action Implementation Agency:** Ministry of Education

**Status:** Work in progress.

**E9.7**

*Plan-Specific Actions:* Launch a national program to encourage organizations and companies within the private sector to tap into the global system of on-line and off-line EDET offerings to facilitate in-company training and skill update on an on-going basis.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Launch a national program for in-company training and skill update in the private sector via EDET by 2007.

*Planned Action Implementation Agency:* The Private Sector Federation, and the Rwanda Labor Unions and Associations.

*Status:* Work to start.

**EDUC-10: Special ICT in Education Programs and Initiatives**

Program Ownership	Ministry of Education
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To transform Rwanda into an IT-literate nation</li> <li>• To transform the educational system using ICTs with the aim to improving accessibility, quality and relevance to the development needs of Rwanda</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To promote academic exchanges and other educational twinning arrangements between Rwandan schools and their counterparts in other parts of the world</li> <li>• To development and implement the SMART school concept in Rwanda</li> <li>• To facilitate IT penetration in rural area schools</li> </ul>

**E10.1**

*Plan-Specific Actions:* Program to encourage Rwandan schools (secondary, vocational and technical) to engage in educational pairing arrangements with their counterparts in other countries to facilitate academic exchanges and inter-student sharing of experiences and knowledge using the facilities of the Internet.

*Prerequisites:* None

*Planned Action Linkages:* EDUC-3

*Time-Bound Measurable Targets:* Ministry of Education by 2007 to institute a nationwide programme to facilitate inter-school academic exchanges and twinning arrangement between Rwandan Schools and their counterparts in other countries. Target twinning in at least five schools from each Prefecture with other schools outside Rwanda by 2010.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work in progress.

**E10.2**

*Plan-Specific Actions:* The Rwandan Experimental SMART Schools Initiative (RESSI). Note: The implementation of RESSI will target the implementation of the SMART Schools concept currently being implemented in Malaysia, India and other countries. The SMART schools concept for introducing computer education into the school system does not lay emphasis only on Information Technology in schools, but also on the use of skills and values that will be important in the next millennium.

*Prerequisites:* Ministry of Education to prepare a Policy document on the implementation of RESSI by 2007.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Target designating two schools per Prefecture by 2008. Double the number of RESSI Experimental Schools per Prefecture annually during the rest of the NICI-2010 time frame.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work to Start

**E10.3**

*Plan-Specific Actions:* Special initiative to deploy the expertise of ICT-trained serving, retired and demobilized military personnel to serve as a special IT corps for IT penetration in rural area schools.

*Prerequisites:* None

*Planned Action Linkages:* E7.3

*Time-Bound Measurable Targets:* Ministry of Education in collaboration with the Ministry of Defense and National Security and to by 2008 put in place a package and a programme to facilitate the deployment of ICT Military personnel in rural area schools.

*Planned Action Implementation Agency:* Ministry of Education and Ministry of Defense and National Security

*Status:* Work in Progress

**EDUC-11: Initiative to Set Up the Regional Information Technology Institute (RITI)**

Program Ownership	Ministry of Education
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To transform Rwanda into an IT-literate nation</li> <li>• To improve the human resource development capacity of Rwanda to meet the changing demands of the economy</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To take advantage of the multi-lingual status of Rwanda to set up a world-class sub-regional multi-lingual ICT Training and Research Institute in Rwanda</li> <li>• To increase ICT-related human resource development capacity in Rwanda and in the sub-region</li> </ul>

**E11.1**

*Plan-Specific Actions:* Ministry of Education to commission a report on the establishment of RITI.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Education to commission and complete a report on the establishment of RITI by 2007.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work in progress.

**E11.2**

*Plan-Specific Actions:* Ministry of Education to facilitate the establishment of RITI.

*Prerequisites:* The RITI Report.

*Planned Action Linkages:* E11.1

*Time-Bound Measurable Targets:* Establish RITI by 2008.

*Planned Action Implementation Agency:* Ministry of Education

*Status:* Work in progress.

## **ICTS IN EDUCATION SUB-PLAN: THE IMPLEMENTATION SCHEDULES OF PLANNED ACTIONS**

## MULTI-SECTORAL ECONOMIC DEVELOPMENT AND ICT-2020 POLICY IMPLICATIONS, AND RISK FACTORS OF THE SUB-PLAN

## Possible Contributions to the Realization of the GOR's Multi-Sectoral Economic Development Policy

The implementation of the Planned Actions of this sub-plan will make a substantial impact on the development of the key sectors of the economy in the long term. The development of the Rwandan information and knowledge economy will depend heavily on how much of their resources are invested into promoting the deployment, utilization and exploitation of ICTs in the Educational System. The rapid development of targeted lead sectors like the services sector and the industrial sector as well as the modernization of the agriculture sector will depend on a skilled work force, the development of which could be aided in the medium and long term by the implementation of a number of the key Planned Actions of this sub-plan. Overall, it is anticipated that the implementation of the key Planned Actions of this sub-plan will positively contribute towards the realization of the GOR's multi-sectoral economic development policy.

## Areas of Emphasis as per the ICT-2020 Policy

A number of the programs, initiatives and Planned Actions of this sub-plan are targeted at facilitating the deployment, exploitation and utilization of ICTs in the Educational System. It is, however, envisaged that some of the Planned Actions will, in the long run, make substantial contributions towards the development of the local ICT production and service provision sector of the economy by way of providing the skilled ICT human resources necessary for developing these sectors. The *ICTs in Education Sub-plan* will therefore contribute to the realization of the GOR's policy goal to simultaneously pursue both ICT exploitation and production policy. This will involve the utilization and exploitation of ICTs to support the delivery of government services and the activities of various sectors of the economy as well as the production, development and delivery of ICT products and services, i.e. towards the development and promotion of an ICT industry and service sector.

## Expectations for the Development of Rwanda's Information and Knowledge-based Society and Economy (IKE) Development Goals

It is anticipated that the implementation of the Planned Actions of the *ICTs in Education Sub-plan* will contribute to the process of the development of the Rwanda's information society and economy – the ultimate goal of the Rwandan ICT-led development vision. In particular, it is envisaged that the implementation of the initiatives of this will lead to the achievement of the following Information and Knowledge Economy (IKE) goals:

- The development of an economy characterized by a modern educational system within which ICTs are widely deployed to facilitate the delivery of educational services.
  - The development of a high income economy dominated by trading in ICT products and services.

- The development of an economy characterized by a large commercial services sector with a reasonably large and vibrant ICT services sub-sector and industry
- The development of an economy with a globally competitive industrial and services sector which is, to a large extent, driven by cutting-edge R&D activities
- The development of an economy based on a rich pool of highly skilled human resources in critical skill areas relevant for developing and maintaining a competitive edge on the global market
- The development of an economy characterized by a widespread deployment and exploitation of ICTs within the society to support the delivery of health, education, government and social services
- The development of an economy in which a reasonably large proportion of the population has access to information and communications technology products and services
- The development of an economy based on a literate society with a high proportion of computer literate people.

#### The Risk Factors

A number of risks can be associated with this sub-plan. For example, there is the risk of deepening the gap between rich and well-endowed schools and the poor and less-endowed schools. This is likely if the implementation of the Planned Actions relating to the deployment and exploitation of ICTs in schools is not evenly spread and balanced.

Children in disadvantaged schools could be further disadvantaged if they lack certain basic amenities such as electricity and telephones, and thus are left out of the “ICT deployment in schools” loop. The risk of creating a comparatively inferior learning environment for some of Rwanda’s school children could therefore be compounded by an unbalanced deployment of ICTs in schools.

Other possible risk factors relating to the implementation of the *ICTs in Education Sub-plan* are similar to those of the *Human Capacity Development Sub-plan*. For example, initiatives targeted at speeding-up the deployment, exploitation and development of ICTs in higher educational institutions do require a reasonable amount of investment in terms of resources that could eventually lead to the development of quality human resources in ICT skills and other related skill areas. In the event that there is no corresponding improvement in the economy to generate quality jobs to absorb this highly skilled manpower, there is the risk that Rwanda will experience a brain drain of expensively trained and highly qualified professional and technical expertise that the country desperately needs for initiating and fuelling Rwanda’s own socio-economic development. The risk of flight of skilled manpower abroad because of lack of opportunities at home will mean that Rwanda will be losing out on both the actual and opportunity cost (a high one) of training this skilled manpower, as well as losing out due to the non-availability of this manpower’s services for its own socio-economic development efforts.

To avoid or reduce this risk, therefore, there is a need to provide the conditions for the deployment and utilization of trained skilled manpower that could result from the implementation of some of the Planned Actions of the *ICTs in Education Sub-plan* by also implementing those other sub-plans directly targeted at boosting economic activity. By doing so, employment opportunities will be generated for the skilled professional, managerial and technical manpower.



## THE SUB-PLAN FOR HUMAN CAPACITY DEVELOPMENT

### Summary of National Strategy and Policy Linkages of the Sub-plan

#### Relevant Vision for Rwanda (VfR) Mission Strategies

- To improve the human resource development capacity of Rwanda to meet the changing demands of the economy
- To transform Rwanda into an IT-literate nation.
- To promote and encourage the deployment and utilization of ICTs within the economy and society.

#### Relevant Government Policy Commitments

##### *Commitment for a Comprehensive Human Resource Development and Deployment*

The GOR acknowledges that the extent to which Rwanda will benefit from the advances and opportunities of the emerging information age will depend on how Rwanda is capable of developing and harnessing its human resources to initiate, support and maintain its socio-economic development towards an information and knowledge economy.

The GOR further acknowledges that the young population of Rwanda can be transformed into an asset by adding value to human resources and providing the environment for utilizing these resources for the socio-economic development process, and that ICTs could play a major role in this area.

The GOR is therefore fully committed to putting in place and facilitating the implementation of a comprehensive human resource development program to support the development of the Rwandan information society and economy. The GOR firmly believes that the human resource is the ultimate resource – more so for a nation like Rwanda without any key natural resources. The development of people to support the process of moving Rwanda into an information society and economy is therefore the Government’s top priority, and the crucial role that ICTs can play in this area is fully recognized and promoted by the government.

##### *Commitment to R&D Initiatives to Support the Development and Exploitation of ICTs*

To enhance Rwanda’s capacity to develop, produce, manufacture and assemble ICT products and services as a step towards developing a local globally competitive ICT service sector and industry, the GOR is committed to promoting and supporting R&D initiatives in Rwandan research institutions, universities and colleges.

The Government, as part of its strategy in this area, will be encouraging partnership, collaboration and linkages between local R&D institutions and foreign centers of excellence to speed up the process of knowledge and expertise transfer to Rwandans.

#### Relevant ICT4D Policy Expectations

- Facilitate the development of a local ICT industry to facilitate the production, manufacturing, development, delivering and distribution of ICT products and services.
- Contribute to the development of the national human resource capacity to meet the changing demands of the economy.
- Contribute to the development and implementation of e-Commerce in Rwanda.
- Facilitate the development and promotion of the necessary standards practices and guidelines to support the deployment and exploitation of ICTs within the society and economy.
- Promote widespread deployment and access to information and communication technologies and resources within the community in both the urban and rural areas of the country.
- Contribute to the development and implementation of e-Government, e-Commerce and e-Education in Rwanda.

## Policy Action Items

In order to implement its ICT4D Policy intentions in the area of human capacity development within the context of facilitating the development of the Rwandan information and knowledge-based economy and society, the Government is committed to implementing specific Planned Actions targeted at achieving the objectives and goals of the following policy action items:

### *Policy Action Item 1: Develop ICT Skills in Civil Society, Private and Public Sectors*

- Encourage the certification of workforces on ICT products that are non-technical in nature but for the general use of knowledge workers.
- Launch e-Learning projects addressed at the Rwandese workforce that provide them with improved ICT and organizational skills.
- Define ICT literacy levels for various jobs allowing managers to develop their staff and perform regular evaluations. Ensure that with time, more and more jobs include ICT skills as part of their prerequisites.
- Career paths need to be streamlined to include growth in ICT skills.
- Encourage academic institutions to cooperate with the ICT Sector to ensure that the educational programs provided by such institutions improve the ICT skills of various job types.
- Ensure that the Ministry of Education coordinates with universities and the ICT Sector when developing its own ICT educational curricula.
- Encourage SMEs to train their workforces in ICT skills. This requires ensuring that such SMEs provide the necessary ICT infrastructure.
- Develop training programs for ICT skills throughout the public sector.
- Improve the availability of books that support ICT skills by encouraging technical book fairs, reduction of taxes on books and CDs.

### *Policy Action Item 2: Develop Business Skills in Civil Society, Private and Public Sectors*

- Provide managerial training for business owners and skilled personnel.
- Encourage the conducting of management training to be attended by middle and senior management
- Introduce quality management schemes such as workflow management systems, document management and business intelligence processing.
- Encourage the use of modern technologies that will naturally improve the business skills of employees.
- Expose employees to modern management techniques.
- Raise the awareness of the importance of the customer in all private sector transactions.
- Instruct civil servants in the administrative and official procedures of the Government of Rwanda.
- Raise the awareness of the importance of the citizen in all government transactions.

### *Policy Action Item 3: Promote Change Management*

- Ensure that all institutional changes are executed with a minimum of administrative shock.
- Implement Planned Actions that optimize the assignment of staff to the right positions.
- Ensure that new organizational structures are always preceded by competence-building to enable smooth changeover.
- Evolve migration paths for ideal institutional change.

## PLANNED ACTIONS

### HRD-2.01: ICT Capacity-Building in the Public and Private Sector

Type	Training Projects
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	This Planned Action is an aspect of H5.2 of the NICI-2005 Plan H5.2: Implement special Basic Computing and Internet Usage Training in all Ministries and Public Sector Organizations (PSOs) for user staff from directors and down
Planned Action Prerequisites and Linkages	Prerequisites: Build four additional ICT training centers Linkages: This is a global requirement for all other ICT-based Planned Actions
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Public Service, Skills Development, Vocational Training & Labor (MIFOTRA)
Implementation Agencies	MIFOTRA in collaboration with the Private Sector Federation; all Ministries and Agencies; Ministry of Education, Science, Technology and Scientific Research; National Civil Society Platform

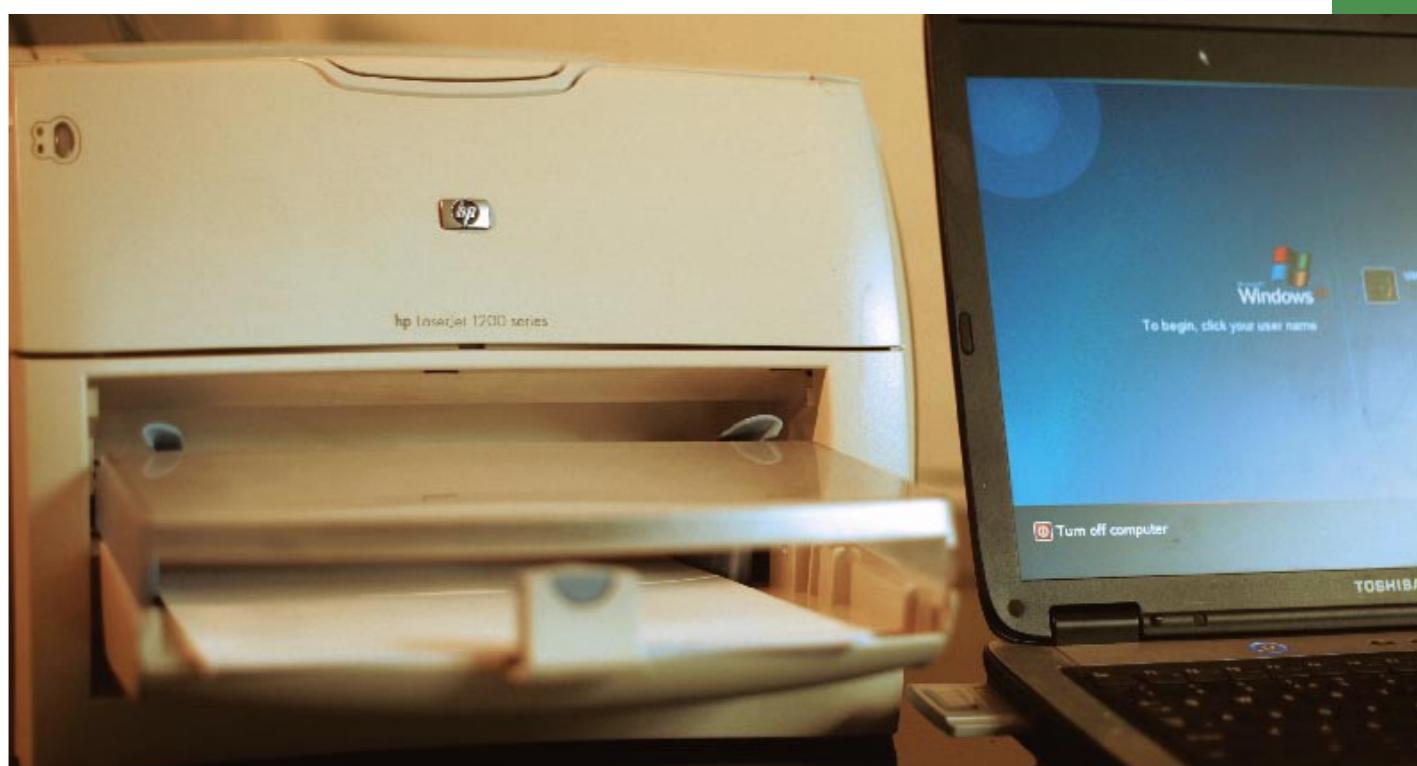
### Planned Action Details

#### Purpose:

Encourage the public and private sector to start using ICT in their transactions.

#### Description:

Strengthen ICT training centers. The target is to train 2,000 people per year. They will be trained as super-users who can assist others in their information processing and handling requirements as well as expert users who can perform more specialized tasks, such as PC troubleshooting and maintenance. They will receive both end user training and specialist training. More importantly, and to provide proper ICT support, all ICT personnel must be properly trained, specifically as analysts, designers, software engineers and administrators.



***Benefits of the Planned Action:***

- ICT competence increases the chance of implementing better ICT Planned Actions
- ICT competence increases the efficiency of day-to-day operations

***Current and On-going Work:***

There is already an existing E-ICT Training Center that has trained thousands of people, both in Government and the private sector.

***Risks:***

- Not enough space to accommodate 2,000 people per year
- Funds to pay specialized ICT teachers

***Budgetary Estimate:***

Category E (between US\$1 million and US\$3 million)

***Schedule:***

Train 2,000 people every year for five years (covering both public and private sectors).

- Centers may be hosted in major Rwandan universities.

**TCCs will have the following facilities:**

- An on-going stream of lectures, workshops and conferences on new technologies.
- Installation bays that have full set-up of the new technologies with the requisite staff needed to demonstrate them and respond to the public.
- Sessions can be booked by various organizations in the private and public sectors to gain hands-on experience in such technologies. These will be conducted by the vendors and will vary in duration and depth according to the requirements of the companies.
- Coordination between various vendors will be a primary condition to cover cases of inter-operability.
- Students needing specialized ICT set-ups to complete projects, theses or experiments can use the centers. Such work can be completed in coordination with vendors who may find such students to be suitable candidates for later recruitment.
- Centers should be spread all over Rwanda and not concentrated only in Kigali or the major cities.
- Centers need to be interconnected to provide remote access to the resources available, thus alleviating the need to duplicate expensive set-ups in every center.

***Budgetary Estimate:***

Category C (between US\$500,000 and US\$800,000)

***Schedule:***

Phase 1: Promote the concept with ICT vendors and ensure sustainable funding for the project (around two months).

Phase 2: Establish the first (pilot) TCC in a specific university and open it to the public through suitable awareness and promotion campaigns.

Phase 3: Based on the lessons learned in the first TCC, launch the rest.

HRD-2.02: Establish ICT Research and Technology Competency Centers	
Type	Institutional Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Education
Implementation Agencies	Ministry of Education in collaboration with: research institutes, universities and colleges, Ministry of Science, Technology and Scientific Research and Ministry of Infrastructure

**Planned Action Details*****Purpose:***

Establish ICT Research and Technology Competency Centers where new technology can be reviewed. The centers will also invite participants to gain hands-on training in the new technologies.

***Description:***

One of the key problems with ICT is the constantly changing nature of technology. The impact of such changes is wide and costly:

- In order to remain up-to-date, companies will need to expend major efforts and funds of their own.
- Professionals are not always capable of keeping up-to-date on their own.
- Vendors promoting the new technologies have a hard time convincing prospects of the facilities and benefits of the new technologies.
- As many of the new technologies are inter-operable, it is often unlikely that such technologies can be experimented with without strong coordination between different vendors.

The Planned Action to address the above challenges is to establish Technology Competency Centers.

- The centers will be funded by a group of vendors.
- They will be supported and encouraged by Government through subsidies, exemptions and incentives.
- They will be supported by various donors with interests in development.

HRD-2.03: Human Resources Management/Planning Information System for the Health Sector	
Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Health
Implementation Agencies	Ministry of Health in collaboration with the Human Resources Development Agency (HIDA); hospitals and health centers

**Planned Action Details*****Purpose:***

The Health Human Resources Management/Planning Information System (HRM/PIS) aims at improving the availability of human resources in health centers, especially in remote areas.

***Description:***

The lack of well-trained, highly motivated health professionals in the health system has been identified as one of the core problems for the sector. There is a concentration of health professionals within the richest region of the country, the city of Kigali, where 75% of all doctors and over 50% of nurses are stationed.

This means that some provinces, namely Gikongoro, Byumba, Gisenyi and Gitarama, have serious shortfalls in health professionals.

Furthermore, the capacity to train health professionals both in universities and in services is insufficient to meet the requirements.

Finally, poor management of human resources is cited as a key cause for the low availability of health professionals.

The Planned Action aims at improving the availability of health human resources by:

- Expanding basic training and in-service training.
- Establishing an equitable geographical distribution of health care professionals.
- Strengthening the management of human resources.

The facilities provided by the HRM/PIS are:

- Training institutions database, including capacities.
- Health care training and education programs database.
- Health professional database including geographical distribution.
- Nationwide health centers database.
- Job descriptions of all health professionals.
- Management of personnel recruitment, allocation and distribution.
- Monitoring tool to locate health professionals in health centers.
- Monitoring tool to locate under-served areas and health centers.
- Monitoring equitable geographical distribution of health professionals.
- Ability to assign/rotate health professionals in new or vacant posts.
- Career advancement plan.
- Budget allocation to health centers.
- Decentralized management.



- Salary management system at health centers.
- Consolidated nationwide health professionals data at Ministry of Health.
- Tools for evaluating personnel performance.

The implementation of the human resource strategy will be closely coordinated with the construction of health facilities to ensure that the objective of increasing the proportion of health facilities whilst meeting minimum staffing norms is achieved.

All health centers must have on-line access to the HRM/PIS.

*Benefits of the Planned Action:*

Increased role for provinces, health districts and health facilities in the management of health professionals as performance based contracting is expanded and the responsibility for management of salary supplements is transferred to a lower level.

*Budgetary Estimate:*

Category C (between US\$500,000 and US\$800,000)

*Schedule:*

- Phase 1: Analysis and design of the Health Human Resources Management/ Planning Information System (around six months).
- Phase 2: Develop a distributed and integrated system and perform nationwide surveys for data collection of all Human Resources/Health Center constituents (one year).
- Phase 4: Implement and operate the system at the Ministry of Health (six months).
- Phase 5: Prototype Planned Action at decentralized centers (six months).

**HRD-2.04: Encourage ICT Certification Programs**

Type	Institutional Projects
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	<b>This Planned Action is an aspect of H13.1 of the NICI-2005 Plan</b> <b>H13.1:</b> Ministry of Education in collaboration with the Rwanda Bureau of Standards and a recognized National ICT professional body or association to draw up guidelines for ICT Professional Skill Certification in Rwanda
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	RITA
Implementation Agencies	RITA in collaboration with Academia (universities and vocational); Private Sector Federation

**Planned Action Details**

*Purpose:*

To encourage certification programs as an added benefit to traditional formal education.

*Description:*

While universities do excel in formal education, a new line of education is becoming crucial, particularly in ICT. This education aims at certifying people in very specific competencies. In ICT, major vendors have certification schemes for their own material, while other schemes are more generic and can vary from technology to technology – such as for information security (CISA) to project management (PMP from the Project Management Institute). Facing a rapidly changing world of technology, the workforce needs agility and responsiveness that only such certification programs can provide.

A close partnership between the private sector and Academia can result in a major jump in the quality of certification courses.

*Current and On-going Work:*

Kigali Institute of Science and Technology (KIST)

*Budgetary Estimate:*

Category A (Less than US\$200,000)

**HRD-2.05: ICT Skills Portal**

Type	Institutional Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	MINEDUC
Implementation Agencies	Universities and colleges in collaboration with the Ministry of Education; National Curriculum Development Center; Rwanda ICT Association and RITA

**Planned Action Details**

*Purpose:*

To provide a portal that leads Rwandan citizens to on-line learning related to ICT skills

*Description:*

Many sites have a wide range of ICT-related training courses on-line. These are usually offered at very low prices. The key feature of this project is to acquire subscriptions to various chargeable sites and follow the scheme below to allow access to them by the citizen.

The Planned Action proposes a project whereby the following can be achieved:

- An entity to be identified or created to handle all such functions, keeping the portal up-to-date and monitoring its use
- A service will be provided for citizens to register so activity can be monitored and facilities announced as and when they are acquired
- The entity would research all free portals and collect them as links on one page with brief instructions and guidelines
- The entity would be funded to subscribe to chargeable portals if need be
- Citizens will connect to the portal to access their training courses

The portal should be widely advertised and made available to all citizens.

*Budgetary Estimate:*

Category B (Between US\$200,000 and US\$500,000)

*Schedule:*

Phase 1: Establish the entity to handle the portal (three months).

Phase 2: Develop the web portal (around three months).

Phase 3: On-going research to acquire proper material.

**PLANNED ACTIONS ROLLED OVER FROM THE NICI-2005 PLAN**

**HRD-1: Initiatives to Examine and Monitor the Human Resource Status of the Country and Set Up Relevant Human Resource Development Facilitating Structures and Bodies**

Program Ownership	HIDA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To develop and harness the nation's human resources to initiate, support and maintain Rwanda's socio-economic development towards an information and knowledge economy</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To facilitate the process of human resource development to support the activities of the various sectors of the economy</li> </ul>

**H1.3**

*Plan-Specific Actions:* Conduct a Comprehensive Human Resource Assessment Study to establish on a periodic basis the national human resource inventory (supply) and shortfall (demand) in key skill and professional areas.

*Note:* The output of this 2-yearly study will be the National Human Resource Assessment Report (e.g. National Human Resource Assessment Report–2007, National Human Resource Assessment Report–2004 and so on)

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The National Human Resource Development Agency (HIDA) from 2007 to carry out a National Human Resource Assessment Study on a two-yearly basis to establish supply and demand of human resources in all key skill and professional areas.

*Planned Action Implementation Agency:* HIDA

*Status:* Work to start.

**HRD-2: Program to Promote the Acquisition of Computer Equipment by Civil and Public Service Organizations**

Program Ownership	Ministry of Finance and Economic Planning
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To develop and harness the nation's human resources to initiate, support and maintain Rwanda's socio-economic development towards an information and knowledge economy</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To facilitate computer resource acquisition to aid the process of ICT human resource development in the civil and public service</li> <li>• To make computers and its products affordable and accessible to the civil and public service, and to assist their efforts in improving the skill base of civil and public servants in the areas of ICTs and in other related skills</li> <li>• To speed up the process of computerization within the civil and public service</li> </ul>

**H2.1**

*Plan-Specific Actions:* Implement tax policy instruments to facilitate the importation of computers and other ICT equipment at special low import duty rates by the civil and public service.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Reduce Import and Excise Duties on computer products to zero rate by the fourth quarter of 2007 – targeted at the civil service and selected Public Service Organizations.

*Planned Action Implementation Agency:* Ministry and Finance and Economic Planning

*Status:* Work in progress.

<b>HRD-3: Program to Facilitate the Private Sector to Invest in Human Resource Development</b>	
Program Ownership	Ministry of Finance and Economic Planning
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop and harness the nation's human resources to initiate, support and maintain Rwanda's socio-economic development towards an information and knowledge economy</li> <li>To develop and facilitate the implementation of a comprehensive human resource development program to support the development of the Rwandan information society and economy</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To encourage the private sector to invest in human resource development</li> <li>To provide HRD tax allowances and rebates to companies and establishments to defray HRD cost, including the cost of training or upgrading the computer skills of their staff or for participating in Youth Employment Programs, a component of which could involve the recruitment of unemployed youth and school leavers to undergo in-house training in computer-related skills for possible employment</li> </ul>

**H3.1**

*Plan-Specific Actions:* Implement special tax instruments and packages that enable companies to claim expenditure on human resource development as tax allowances or tax rebates.

*Prerequisites:* None

*Planned Action Linkages:* H9.2

*Time-Bound Measurable Targets:* Provide private sector organizations 100% tax allowance on HRD-related expenditure by 2007.

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning

*Status:* Work to start.

<b>HRD-4: Initiative to Promote Home Ownership of Computers</b>	
Program Ownership	Ministry of Finance and Economic Planning
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop and harness the nation's human resources to initiate, support and maintain Rwanda's socio-economic development towards an information and knowledge economy</li> <li>To develop and transform the young population of Rwanda into an asset by adding value to human resources and provide the environment for utilizing these resources for socio-economic development process</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To increase the pace of computer penetration into the community in the shortest possible time</li> <li>To make home ownership of computers easy and affordable as a step towards facilitating the process of ICT skills development and the widespread use of computers and the Internet in the society</li> </ul>

**H4.1**

*Plan-Specific Actions:* Implement tax policy instruments to make the price of computers affordable to the public at large.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Reduce Import Duties on computers by 2007 to bring computer equipment price down. Implement in the 2006/2007 Budget and other subsequent Budgets special tax provisions to facilitate the importation of computer components for local assembly.

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning  
*Status:* Work in progress.

**H4.2**

*Plan-Specific Actions:* Implement a special tax instrument to reduce or eliminate taxes on computers assembled locally to encourage the purchase of these computers to boost the local industry.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Implement in the 2006/2007 Budget and other subsequent Budgets (within NICI-2010 time-frame) special tax instrument to reduce or eliminate taxes on locally assembled computers.

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning

*Status:* Work in progress.

**HRD-5: Program for ICT Skills Development and Upgrading in the Civil and Public Service**

Program Ownership	Ministry of Public Service, Skills Development and Labor
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop and harness the nation's human resources to initiate, support and maintain Rwanda's socio-economic development towards an information and knowledge economy</li> <li>To develop and facilitate the implementation of a comprehensive human resource development program to support the development of the Rwandan information society and economy</li> <li>To develop and transform the young population of Rwanda into an asset by adding value to human resources and provide the environment for utilizing these resources for socio-economic development process.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To equip all civil and public servants with basic computing skills</li> <li>To recruit/train and upgrade the skills of specialist computer professionals to operate and manage computer systems of the various Government Ministries and Public Sector Organizations</li> </ul>

**H5.1**

*Plan-Specific Actions:* Implement a Special Basic Computing and Internet Usage Training Program for all Ministers and Secretary Generals as well as for Chief Executives and senior staff of Public Sector Organizations (PSOs).

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* All Ministers and Secretary Generals, as well as Chief Executives and senior staff of Public Sector Organizations (PSOs) should be trained in the use of computers and the Internet by the fourth quarter of 2006.

*Planned Action Implementation Agency:* Ministry of Public Service, Skills Development and Labor in collaboration with the relevant Ministries and PSOs.

*Status:* Work in progress.

**H5.2**

*Plan-Specific Actions:* Implement a Special Basic Computing and Internet Usage Training in all Ministries and Public Sector Organizations (PSOs) for the user staff from directors and down. *Note:* This training program will also be aimed at Parliamentarians as well as the administrative staff of the National Parliament.

*Prerequisites:* Government Ministries and PSOs must have their computer system in place.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* About 40% of the staff of each Ministry and PSO should be trained in basic computing and Internet usage by the fourth quarter of 2006. About 80 to 100% of the staff of each Ministry and PSO should be trained in basic computing and Internet usage by 2007.

*Planned Action Implementation Agency:* Ministry of Public Service, Skills Development and Labor in collaboration with the relevant Ministries and PSOs.

*Status:* Work in progress.

#### H5.3

*Plan-Specific Actions:* Introduce Special Professional Level ICT Training Programs to train and upgrade the skill of professional IT staff in all Ministries and Public Sector Organizations including the Parliament.

*Prerequisites:* Government Ministries and Public Organizations must have their computer system in place.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Each Ministry and PSO, depending on size and its operations, should train/recruit a skeleton computer professional staff in the relevant key skill areas by the fourth quarter of 2006. Each Ministry and PSO, depending on size and its operations, should train/recruit all the required professional computer staff by 2007.

*Planned Action Implementation Agency:* Ministry of Public Service, Skills Development and Labor in collaboration with the relevant Ministries and PSOs.

*Status:* Work in progress.

#### H5.4

*Plan-Specific Actions:* Implement an “Office Space-for-Service” Initiative aimed at enabling Government Ministries and PSOs to rent their unutilized office space to private computer service-provision companies. *Note:* This initiative will enable a proportion of the rent charged to be waived in return for, say, free computer training to the employees of the Ministry or PSOs.

*Prerequisites:* Ministry of Infrastructure in collaboration with the Ministry of Public Service will need to formulate specific guidelines to guide the implementation of this initiative.



*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Infrastructure in collaboration with the Ministry of Public Service to commission a Report to set out the guidelines for implementing the “Office Space-for-Service” Initiative by the fourth quarter of 2006. Implement the “Office Space-for-Service” Initiative starting from 2007.

*Planned Action Implementation Agency:* Ministry of Infrastructure in collaboration with other Government Ministries and PSOs.

*Status:* Work to start.

#### H5.5

*Plan-Specific Actions:* Government to issue a directive to make IT literacy an essential requirement for all future Government and public sector employment. *Note:* This directive should also stipulate that future promotions in the civil and public service would require basic knowledge in the use of computer. In addition, annual confidential reports of Government and public sector employees will contain details of the degree of employees’ use of computers in discharging their duties.

*Prerequisites:* The Ministry of Public Service will need to draw-up the guidelines for implementing this directive once the Government issues it.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The Ministry of Public Service to issue a Directive to make IT literacy a basic requirement for future employment and promotions within the civil and public service by the fourth quarter of 2006.

*Planned Action Implementation Agency:* Ministry of Public Service, Skills Development and Labor.

*Status:* Work to start.

### HRD-6: Program to Improve Management, Policy Formulation, Planning, Execution and Monitoring Skills in the Civil and Public Service

Program Ownership	Ministry of Public Service, Skills Development and Labor
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop and harness the nation’s human resources to initiate, support and maintain Rwanda’s socio-economic development towards an information and knowledge economy</li> <li>To develop and facilitate the implementation of a comprehensive human resource development program to support the development of the Rwandan information society and economy</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To upgrade the skill of middle to senior level civil servants in the various Government Ministries and PSOs in the area of management, policy formulation, execution and monitoring</li> </ul>

#### H6.1

*Plan-Specific Actions:* Institute periodic, on-going, short term training programs, workshops and seminars in management, policy formulation, execution and monitoring, for selected number of civil servants from Government Ministries and PSOs.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Short term target: Train 50% of suitably identified civil and public servants in each Ministry or PSO by the fourth quarter of 2007. Long-term target: Train all suitably identified civil and public servants in each Ministry or PSO by 2008.

*Planned Action Implementation Agency:* Ministry of Public Service, Skills Development and Labor in collaboration with the various Ministries and PSOs.

*Status:* Work in progress.

<b>HRD-7: Program to Support Professional Level Skills Development in Targeted Lead Sectors of the Economy, the Service Sector and the ICT Industry</b>	
Program Ownership	HIDA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop and harness the nation's human resources to initiate, support and maintain Rwanda's socio-economic development towards an information and knowledge economy</li> <li>To develop and facilitate the implementation of a comprehensive human resource development program to support the development of the Rwandan information society and economy</li> <li>To develop and transform the young population of Rwanda into an asset by adding value to human resources and provide the environment for utilizing these resources for socio-economic development process</li> <li>To promote and support R&amp;D initiatives in Rwandan Research Institutions, universities and colleges</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To train a wide range of professionals required by the service sector and the ICT industry</li> <li>To use ICTs to facilitate professional level human resource development in business, science and technology</li> </ul>

**H7.1**

*Plan-Specific Actions:* Train adequate number of business professionals such as accountants, bankers and financial service personnel, lawyers, marketing and sales personnel and other professional corps, for the service sector.

*Prerequisites:* The National Human Resource Assessment Studies and Reports.

*Planned Action Linkages:* H1.3

*Time-Bound Measurable Targets:*

**Short term targets:** Increase, by 2007, the Annual enrollment of students taking Business Professional level courses in universities and colleges by 30 to 50%. Upgrade the skill of junior to middle level Business Professionals in private sector establishments within the service sector and the ICT industry by year 2008. Upgrade the skill of junior to middle level Business Professional civil servants in key Ministries linked to the service sector or the ICT Industry by year 2008.

**Long term targets:** Increase, by 2009, the annual enrollment of students taking Business Professional level courses in universities and colleges by 50 to 75%.

*Planned Action Implementation Agency:* Ministry of Education, Ministry of Public Service, Skills Development and Labor, HIDA, Private Sector Federation, individual companies, universities and colleges.

*Status:* Work in progress.

**H7.2**

*Plan-Specific Actions:* Train adequate number of computer professionals such as computer scientists, system developers and analysts, network and telecommunication engineers and technicians, programmers, software developers, Web and content developers, etc.

*Prerequisites:* The National Human Resource Assessment Studies and Reports.

*Planned Action Linkages:* H1.3

*Time-Bound Measurable Targets:* Short term target: Increase, by 2007, the annual enrollment of students taking Computer Professional level courses in universities and colleges by 30 to 50%. Long term target: Increase, by 2009, the annual enrollment of students taking Computer Professional level courses in universities and colleges by 50 to 75%.

*Planned Action Implementation Agency:* Universities and colleges, Ministry of Education.

*Status:* Work in progress.

**H7.3**

*Plan-Specific Actions:* Train adequate number of scientists (pure scientists, computer scientists, mathematicians) as well as engineers and Senior Level technicians (electronic and electrical engineers and technicians, computer

engineers and technicians, mechanical engineers and technicians, and telecommunications engineers and technicians).

*Prerequisites:* The National Human Resource Assessment Studies and Reports.

*Planned Action Linkages:* H1.3

*Time-Bound Measurable Targets:* Short term target: Increase, by 2007, the annual enrollment of students taking Science and Engineering courses in the universities and colleges from 30 to 50%. Long-term target: Increase, by 2009, the annual enrollment of students taking Science and Engineering courses in the universities and colleges from 50 to 75%.

*Planned Action Implementation Agency:* Universities and colleges, Ministry of Education

*Status:* Work in progress.

**HRD-8: Program to Improve the ICT Human Resource Development Capacity of the National University of Rwanda (NUR), the Kigali Institute of Science and Technology (KIST), the Kigali Institute of Education (KIE) and Other Institutions of Higher Learning**

Program Ownership	Ministry of Education
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop and harness the nation's human resources to initiate, support and maintain Rwanda's socio-economic development towards an information and knowledge economy</li> <li>To develop and facilitate the implementation of a comprehensive human resource development program to support the development of the Rwandan information society and economy</li> <li>To develop and transform the young population of Rwanda into an asset by adding value to human resources and provide the environment for utilizing these resources for socio-economic development process</li> <li>To promote and support R&amp;D initiatives in Rwandan Research Institutions, universities and colleges</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To upgrade the facilities and the resources of NUR, KIST, KIE and other institutions of higher learning involved in ICT Human Resource Development</li> </ul>

**H8.1**

*Plan-Specific Actions:* Improve the facilities of NUR, KIST and KIE and make the necessary resources available to them in order to enable them to increase enrolment of students on ICT-related courses, and to introduce additional ICT programs at certificate, diploma and degree levels.

*Prerequisites:* The NUR, KIST and the KIE to cost their respective additional resource and facility improvement requirements to facilitate increase in enrolment of students on ICT-related courses

*Planned Action Linkages:* H7.3, H7.4

*Time-Bound Measurable Targets:* Improve and upgrade, on an on-going basis, the computing facilities and resources of the NUR, KIST and the KIE to accommodate additional students on ICT programs. The Government (within the time-frame of NICI-2010) to increase the respective annual budgets of the NUR, KIST and the KIE by 50 to 75% to facilitate the acquisition of additional resources and facilities in order to meet increase in the enrolment of students on ICT-related programs.

*Planned Action Implementation Agency:* Ministry of Education, universities and colleges.

*Status:* Work in progress.

**H8.2**

*Plan-Specific Actions:* Make the necessary resources available to other private and public institutions of higher learning to enable them to increase student enrolment on recognized ICT programs.

*Prerequisites:* All other institutions of higher learning to cost their respective additional resource and facility improvement requirements to facilitate increase in enrolment of students on ICT-related courses.

*Planned Action Linkages:* H7.3, H7.4

**Time-Bound Measurable Targets:** The Government (within the time-frame of NICI-2010) to make the necessary resources available to other private and public institutions of higher learning to enable them increase student enrolment on recognized ICT programs.

**Planned Action Implementation Agency:** Ministry of Education

**Status:** Work in progress.

#### HRD-9: Program to Set Up a National HRD Fund to Provide Grants to Selected Public and Private Sector Organizations, Academic Institutions and Businesses to Participate in National HRD Programs

Program Ownership	HIDA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop and harness the nation's human resources to initiate, support and maintain Rwanda's socio-economic development towards an information and knowledge economy</li> <li>To develop and facilitate the implementation of a comprehensive human resource development program to support the development of the Rwandan information society and economy</li> <li>To develop and transform the young population of Rwanda into an asset by adding value to human resources and provide the environment for utilizing these resources for socio-economic development process</li> <li>To promote and support R&amp;D initiatives in Rwandan Research Institutions, universities and colleges</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To set up a National Human Resource Development Fund with a target of US\$150 million to fund HRD programs and initiatives</li> </ul>

#### H9.1

**Plan-Specific Actions:** Government to set aside US\$10 million as its direct contribution to HRD Fund for the next five years. *Note:* This will constitute the GOR's contribution from the Treasury to the HRD Fund.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** GOR to allocate US\$3 million from its resources for HRD by 2007. GOR to allocate US\$6 million from its resources for HRD by 2008. GOR to allocate US\$10 million from its resources for HRD by 2009.

**Planned Action Implementation Agency:** Ministry of Finance and Economic Planning and the Rwandan ICT Fund for Development (ICTfDev) Committee.

**Status:** Work in progress.

#### H9.2

**Plan-Specific Actions:** Raise US\$5 million from HRD levy on corporate income. *Note:* This will also constitute the GOR's contribution from the Treasury to the National HRD Fund.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Raise US\$1 million from HRD levy on corporate income by 2007. Raise US\$3 million from HRD levy on corporate income by 2008. Raise US\$5 million from HRD levy on corporate income by 2009.

**Planned Action Implementation Agency:** Ministry of Finance and Economic Planning and the Rwandan ICT Fund for Development (ICTfDev) Committee.

**Status:** Work to start.

#### H9.3

**Plan-Specific Actions:** Time-Bound Measurable Targets: Raise US\$90 million from International Donor Agencies (bilateral and multilateral).

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Raise US\$40 million from International Donor Agencies by 2007. Raise US\$50 million from International Donor Agencies by 2008. Raise US\$90 million from International Donor Agencies by 2009.

**Planned Action Implementation Agency:** The Rwandan ICT Fund for Development (ICTfDev) Committee HIDA.

**Status:** Work in progress.

#### H9.4

**Plan-Specific Actions:** Raise US\$40 million from other foreign donor sources (NGOs, Foundations, company donations, private donations and grants).

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Raise US\$10 million from International Donor Agencies by 2007. Raise US\$25 million from International Donor Agencies by 2008. Raise US\$40 million from International Donor Agencies by 2009.

**Planned Action Implementation Agency:** The Rwandan ICT Fund for Development (ICTfDev) Committee HIDA.

**Status:** Work in progress.

#### H9.5

**Plan-Specific Actions:** Raise US\$5 million from private donations, fund-raising activities and other sources.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Raise US\$1 million from private donations, fund-raising and other sources by 2007. Raise US\$3 million from private donations, fund-raising and other sources by 2008. Raise US\$5 million from private donations, fund-raising and other sources by 2009.

**Planned Action Implementation Agency:** The Rwandan ICT Fund for Development (ICTfDev) Committee HIDA.

**Status:** Work to start.

#### HRD-10: Special Human Resource and Skills Development and Upgrade Initiatives

Program Ownership	HIDA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop and harness the nation's human resources to initiate, support and maintain Rwanda's socio-economic development towards an information and knowledge economy</li> <li>To develop and facilitate the implementation of a comprehensive human resource development program to support the development of the Rwandan information society and economy</li> <li>To develop and transform the young population of Rwanda into an asset by adding value to human resources and provide the environment for utilizing these resources for socio-economic development process</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To set up national structures to complement and supplement national human resource development and skill update efforts</li> <li>To provide the unemployed youth "on-the-job" training and short term jobs</li> <li>To provide the unemployed youth employable skills as part of a national skills development program</li> <li>To facilitate foreign investment in the human resource development sector</li> </ul>

**H10.1**

*Plan-Specific Actions:* Set up a National Youth Training (YTS) Scheme. *Note:* Funds for setting up and implementing the YTS Scheme will come from the National HRD Fund.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The Ministry of Youth Sports and Culture in collaboration with the Ministry of Public Service, Skills Development and Labor and the National Human Resource Development Agency to commission and complete a Report on the setting up of the YTS by the fourth quarter of 2006. HIDA to establish an YTS scheme by the fourth quarter of 2007.

*Planned Action Implementation Agency:* Ministry of Youth, Sports and Culture Ministry of Public Service, Skills Development and Labor, HIDA.

*Status:* Work to start.

**H10.2**

*Plan-Specific Actions:* Set up a National YTS Grant with funds from the HRD Funds and other sources and implement the YTS Scheme.

*Prerequisites:* The National Human Resource Assessment Studies and Reports; setting-up the National HRD Fund; the YTS Report.

*Planned Action Linkages:* H1.3, HRD-9

*Time-Bound Measurable Targets:* Set up the YTS Grant by 2007. At least 2,000 to 4,000 youths should benefit from the YTS Training Scheme annually, by 2008. The total number of youths benefiting from the Scheme annually should double by 2010.

*Planned Action Implementation Agency:* HIDA Ministry of Public Service, Skills Development and Labor, Ministry of Youth, Sports and Culture, the Private Sector Federation.

*Status:* Work to start.

**H10.3**

*Plan-Specific Actions:* Provide YTS Grants to private and public sector organizations participating in the Scheme to defray part of the cost of providing jobs or training unemployed youth on the Scheme.

*Prerequisites:* Setting-up the HRD Fund.

*Planned Action Linkages:* HRD-9

*Time-Bound Measurable Targets:* Provide YTS Grants to private and public sector organizations participating in the Scheme during each stage of the program.

*Planned Action Implementation Agency:* HIDA

*Status:* Work to start.

**H10.4**

*Plan-Specific Actions:* Program to set up the Rwandan Worker's College and associated Regional Training Centers for Human Resource Development and Skill Update. *Note:* The RWC and its regional centers will provide short and long-term training and skill update programs in ranges of skills and professional areas to public and private sector workers. The RWC and its regional centers will also serve as a suitable institution for implementing some of the components of the National Life-Long Learning Initiative (NLLI) (as per E9.5) designed to promote and facilitate the concept of Life-Long Learning in Rwanda.

*Prerequisites:* Set up the National HRD Fund.

*Planned Action Linkages:* H1.2, HRD-9, E9.5

*Time-Bound Measurable Targets:* HIDA, in collaboration with the Ministry of Public Service, Skills Development and Labor, the National Labor Union and the Private Sector Federation to commission and complete a Report for setting up the RWC by the fourth quarter of 2006. Establish the RWC in Kigali by 2008. Set up a number of regional centers of the RWC in key Prefectures within the time frame of NICI-2010.

*Planned Action Implementation Agency:* HIDA Ministry of Public Service, Skills Development and Labor, The National Labor Union, and The Private Sector Federation.

*Status:* Work to start.

**H10.5**

*Plan-Specific Actions:* Government, through the National Human Resource Development Agency (NHRDA), to put in place, implement and publicize an Open-Door-HRD policy and initiative to attract HRD foreign investment and world-class professional training and educational service providers and establishments into Rwanda.

*Note:* This initiative is aimed at encouraging any foreign HRD or training company, institution or organization wishing to set up in Rwanda to be able to do so provided they bring in the necessary investment and resources (human and technological) to support their operations and meet standards set by the National Accreditation Bodies.

*Prerequisites:* The National Human Resource Assessment Studies and Reports.

*Planned Action Linkages:* H1.3

*Time-Bound Measurable Targets:* Government, through the HIDA, to put in place, implement and publicize an Open-Door-HRD Initiative by 2007. *Note:* The actual number of world-class professional training and educational service providers and establishments to be allowed to set up, and the type of training programs they will be allowed to offer, will be dictated from time to time on the details of the Two-Yearly National HRD Assessment Studies contained in the National HRD Reports.

*Planned Action Implementation Agency:* HIDA

*Status:* Work to start.

**HRD-11: An Initiative to Set Up the National Vocational Training Commission (NVTC)**

Program Ownership	Ministry of Public Service, Skills Development and Labor
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To develop and harness the nation's human resources to initiate, support and maintain Rwanda's socio-economic development towards an information and knowledge economy</li> <li>• To develop and facilitate the implementation of a comprehensive human resource development program to support the development of the Rwandan information society and economy</li> <li>• To develop and transform the young population of Rwanda into an asset by adding value to human resources and provide the environment for utilizing these resources for socio-economic development process</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To promote vocational training in key skill areas</li> <li>• To facilitate the improvement of vocational training standards throughout the country</li> <li>• To meet the short-fall in vocational skills in key sectors of the economy</li> <li>• To contribute to the manpower and skill update requirements of the cottage industry</li> </ul>

**H11.1**

*Plan-Specific Actions:* Commission a Report for setting up the National Vocational Training Commission (NVTC). *Note:* The NVTC will be responsible for running special training centers (NTVC Training Centers) in all Prefectures to train artisans and tradesmen and women, including carpenters, masons and bricklayers, radio and TV mechanics, dressmakers and tailors, hairdressers, painters, plumbers, automobile mechanics, computer technicians, network technicians, telecommunications technicians, artists and designers, caterers, hospitality workers, etc. Courses in Business Management will also be offered. The NTVC will, as part of its role, will be responsible for awarding National Certificates at various grades to reflect different grades of competence of artisans. These certificates will be awarded to graduates of the NVTC Training Centers and other artisans not trained by NVTC but who were successful at NVTC examinations.

*Prerequisites:* None

*Planned Action Linkages:* None

**Time-Bound Measurable Targets:** The Ministry of Public Service, Skills Development and Labor to commission and complete the NVTC set-up Report by the fourth quarter of 2006. **Note:** This Report will document the functions, organizational structure and operations of the NVTC.

**Planned Action Implementation Agency:** Ministry of Public Service, Skills Development and Labor, HIDA.

**Status:** Work to start.

#### H11.2

**Plan-Specific Actions:** Program to set up the NVTC. **Note:** Funds for setting up the NVTC will come from the National HRD Fund.

**Prerequisites:** The NVTC Report.

**Planned Action Linkages:** HRD-9, H11.1

**Time-Bound Measurable Targets:** The Ministry of Public Service, Skills Development and Labor in collaboration with the National Human Resource Development Agency to set up the NVTC by 2008.

**Planned Action Implementation Agency:** Ministry of Public Service, Skills Development and Labor, the National Human Resource Development Agency.

**Status:** Work to start.

#### H11.3

**Plan-Specific Actions:** Set up NVTC Training Centers. **Note:** Funds for setting up the NVTC Training Centers will come from the National HRD Fund.

**Prerequisites:** The NVTC Report.

**Planned Action Linkages:** HRD-9, H11.1

**Time-Bound Measurable Targets:** Set up pilot NVTC Training Centers in selected Prefectures by 2009.

**Planned Action Implementation Agency:** NVTC

**Status:** Work to start.

### HRD-12: Initiative to Formulate Guidelines and Standards for the Provision of ICT Education and Training Services by Private and Public Institutions

Program Ownership	Ministry of Education
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop and harness the nation's human resources to initiate, support and maintain Rwanda's socio-economic development towards an information and knowledge economy</li> <li>To develop and facilitate the implementation of a comprehensive human resource development program to support the development of the Rwandan information society and economy</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To monitor, improve and enforce standards in the area of computer education and training in the private and public institutions</li> <li>To regularize and standardize ICT training provisions by private computer training centers and institutes</li> <li>To set up and implement an accreditation system for computer education and training centers and Institutions in the private and public sector</li> </ul>

#### H12.1

**Plan-Specific Actions:** Ministry of Education to draw up enforceable guidelines for setting up private and public computer training centers, institutes and colleges in the country.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Draw up and implement guidelines for setting up computer training centers, institutes and colleges by the fourth quarter of 2006.

**Planned Action Implementation Agency:** Ministry of Education

**Status:** Work to start.

#### H12.2

**Plan-Specific Actions:** Ministry of Education to develop and implement an accreditation system for accrediting computer training centers, institutes and colleges in the country.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Put in place an accreditation system for computer training centers, institutes and colleges by the second quarter of 2007.

**Planned Action Implementation Agency:** Ministry of Education

**Status:** Work to start.

#### H12.3

**Plan-Specific Actions:** Ministry of Education in collaboration with the National Council of Computer Education (NCCE) to draw up an updateable list of approved Computer Courses and Programs to be offered by accredited private and public computer training centers, institutes and colleges in the country.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Put in place a mechanism for drawing up an approve list of computer courses and programs in the country. Draw up the first list of approve computer courses and programs by the fourth quarter of 2006. This list should be adapted annually thereafter.

**Planned Action Implementation Agency:** Ministry of Education, the National Council of Computer Education (NCCE).

**Status:** Work to start.

#### H12.4

**Plan-Specific Actions:** HIDA, in collaboration with the Ministry of Public Service, Skills Development and Labor, the National Labor Union, the National Employers Association, relevant CSOs and other industry groupings and associations, to draw up from time to time industry manpower requirements in the area of ICT manpower and skills.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Set up by 2007 an Industry ICT Manpower Requirements Advisory Committee as an ad hoc committee with membership from the Human Resource Development Agency, the Ministry of Public Service, Skills Development and Labor, the National Labor Union, the National Employers Association and other industry groupings and associations including relevant CSOs.

**Planned Action Implementation Agency:** HIDA

**Status:** Work to start.



<b>HRD-13: Program to Define Standards for the Certification of ICT Professional Skills in Rwanda and to Promote Professional Standards in the ICT Profession</b>	
Program Ownership	Ministry of Education
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To develop and harness the nation's human resources to initiate, support and maintain Rwanda's socio-economic development towards an information and knowledge economy</li> <li>• To develop and facilitate the implementation of a comprehensive human resource development program to support the development of the Rwandan information society and economy</li> <li>• To develop and transform the young population of Rwanda into an asset by adding value to human resources and provide an environment for utilizing these resources for socio-economic development process</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To draw up guidelines for the certification of ICT Professional Skills</li> <li>• To define which ICT qualifications and work experience qualifies as an ICT Professional Skill for the purpose of employment and promotion in the private and public sector</li> <li>• To set up Professional Bodies with membership grades</li> <li>• To set up an ICT Users Association as a Trade and Industry Group or Association</li> <li>• To set up relevant artisan and trade associations</li> </ul>

**H13.1**

*Plan-Specific Actions:* Ministry of Education in collaboration with the Rwanda Bureau of Standards and a recognized National ICT Professional Body or Association to draw up guidelines for ICT Professional Skills Certification in Rwanda.

*Prerequisites:* None.

*Planned Action Linkages:* None.

*Time-Bound Measurable Targets:* Draw up guidelines for ICT Professional Skills Certification in Rwanda by the first quarter of 2007.

*Planned Action Implementation Agency:* Ministry of Education, Rwanda Bureau of Standards, national ICT Professional Associations.

*Status:* Work to start.

**H13.2**

*Plan-Specific Actions:* Ministry of Education in collaboration with the Rwanda Bureau of Standards and a recognized National ICT Professional Body or Association to draw up a list of recognized Professional ICT Skills and Qualifications.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Draw up a list of recognized Professional ICT Skills and Qualifications by the fourth quarter of 2007. *Note:* This list should be updated annually thereafter.

*Planned Action Implementation Agency:* Ministry of Education, Rwanda Bureau of Standards, National ICT Professional Associations.

*Status:* Work to start.

**H13.3**

*Plan-Specific Actions:* Set up the Institute for Computer Professionals of Rwanda (ICPR) as a chartered professional IT body. *Note:* The ICPR will be modeled along the patterns of similar professional computer bodies found in most countries in the world. It will among other things work with the proposed Rwandan Council for IT Education to provide Accreditation for IT Education and Training in Rwanda. The ICPR will be fully recognized by the Government.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Initiate the process of establishing the Institute for Computer Professionals of Rwanda (ICPR) by the third quarter of 2006. And a fully fledged society should be operational by 2006

*Planned Action Implementation Agency:* Interested Parties, Organizations and Institutions

*Status:* Work in Progress

**H13.4**

*Plan-Specific Actions:* Set-up other relevant Professional Chattered Organizations in areas like: Accountancy (Rwandan Association of Chattered Accountants), Banking (Rwandan Institute of Bankers); Law (Rwandan Bar Association); Marketing (Rwandan Institute of Marketing), Engineering (The Rwandan Institution of Engineers) among others

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Initiate the process to set up a number of Professional Bodies in Accountancy, Banking, Law, Engineering etc within the time-frame of NICI-2010 Plan.

*Planned Action Implementation Agency:* Interested Parties, Organizations and Institutions

*Status:* Work to start.

**H13.5**

*Plan-Specific Actions:* Set-up the Rwandan Computer Users Association as an ICT Trade and Industry Association

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Initiate the process for establishing the Rwandan Computer Users Association by the fourth quarter of 2006. And a fully fledged Association should be operational by early 2007

*Planned Action Implementation Agency:* Interested Parties, Organizations and Institutions

*Status:* Work to start.

**H13.6**

*Plan-Specific Actions:* Set-up relevant Artisan and Trade Associations to set, regulate and enforce Code of Conduct and Standards in the area of Apprenticeship, Training, Certification and Quality Service within the Cottage Industry. *Note:* Some of the Artisan and Trade Associations that could be set-up include those of: Bricklayers, Carpenters, Painters, Motor Mechanics, Plumbers, Tailors and Dressmakers; Hairdressers etc.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Initiate the process to set up a relevant Artisan and Trade Associations within the time-frame of NICI-2010 Plan.

*Planned Action Implementation Agency:* Interested Parties, Organizations and Institutions

*Status:* Work to start.

## HUMAN CAPACITY DEVELOPMENT SUB-PLAN: THE IMPLEMENTATION SCHEDULE OF THE PLANNED ACTIONS

## MULTI-SECTORAL ECONOMIC DEVELOPMENT AND ICT-2020 POLICY IMPLICATIONS, AND RISK FACTORS OF THE SUB-PLAN

## Possible Contributions to the Realization of the GOR's Multi-Sectoral Economic Development Policy

The implementation of the Planned Actions of this sub-plan will, in the long run, be making a substantial impact on the development of the key sectors of the economy.

The current shortfall in manpower in all key professional and technical skill areas is having an adverse effect in all three sectors targeted by the Government Multi-Sectoral Economic Development Policy. The Planned Actions of this sub-plan will not only go a long way to meet the current shortfall in manpower requirements in all the key sectors, but will also lead to an additional supply of quality professional and technical skills for the economy as a whole.

Furthermore, there is no doubt that the development of the Rwandan information and knowledge economy will depend very much on the volume of resources that are invested into human resource development efforts. The rapid development of targeted lead sectors like the service sector and the industrial sector as well as the modernization of the agriculture sector will depend on a skilled work force, the development of which could be aided in the medium and long term by the implementation of the Planned Actions identified under this sub-plan.

## Areas of Emphasis as per the ICT-2020 Policy

The implementation of the Planned Actions of the *Human Capacity Development Sub-plan* will have implications for both the exploitation and production of ICTs in Rwanda. A number of the HRD Planned Actions identified for implementation will require the deployment and exploitation of ICTs in one form or another. In addition, some of the ICT professional and technical manpower developed as per this sub-plan, will be utilized to facilitate the deployment and exploitation of ICTs in key sectors of the economy.

Furthermore, the development of a local ICT production and service provision industry will require quality ICT manpower, both in the professional and technical skills area. A number of the Planned Actions under the *HRD Sub-plan* are targeted at producing local ICT skills that could, in the medium to long term, be deployed in the ICT production industry.

The *Human Capacity Development Sub-plan* will therefore contribute to the GOR's policy goal to simultaneously pursue both ICT exploitation and production policy towards the development and promotion of an ICT industry and service sector. This will involve the utilization and exploitation of ICTs to support the delivery of government services and the activities of various sectors of the economy, as well as the production, development and delivery of ICT products and services.

## Expectations for the Development of Rwanda's Information and Knowledge-based Society and Economy (IKE) Development Goals

It is anticipated that the implementation of the Planned Actions of the *Human Capacity Development Sub-plan* will contribute to the process of the development of Rwanda's information society and economy – the ultimate goal of the Rwandan ICT-led development vision. In particular, it is envisaged that the implementation of the

initiatives of this sub-plan will lead to the achievement of the following Information and Knowledge Economy (IKE) goals:

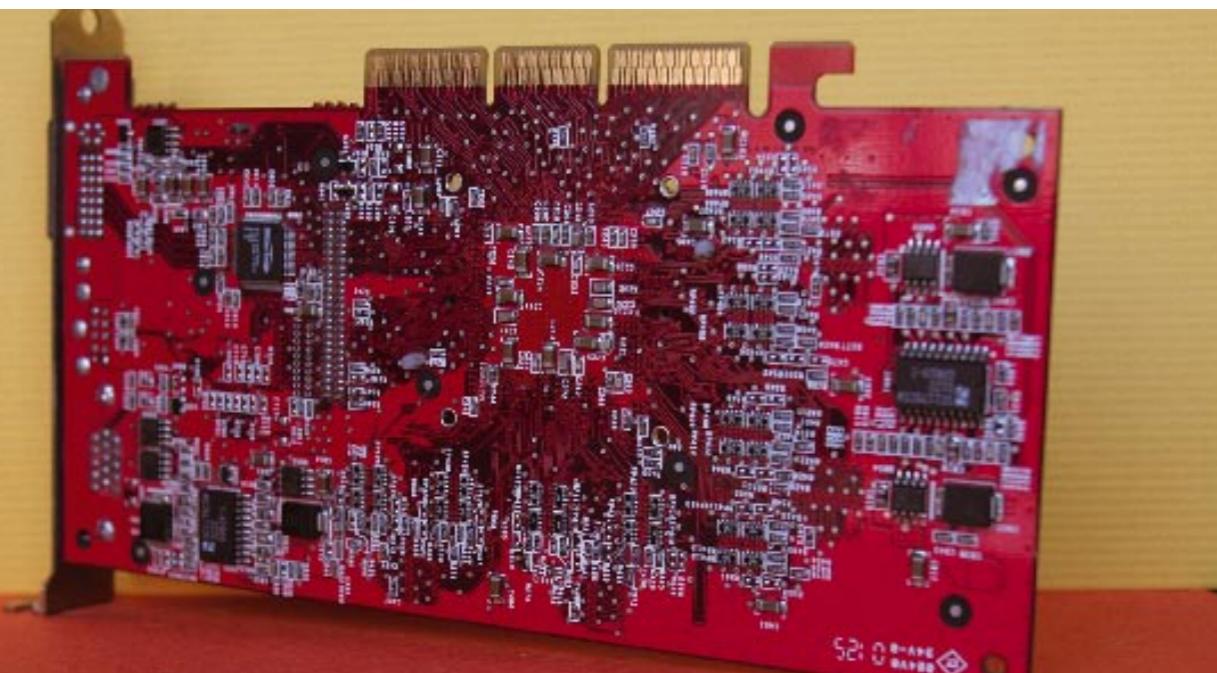
- The development of a high-income economy dominated by trading in ICT products and services
- The development of an economy characterized by a large commercial services sector with a reasonably large and vibrant ICT services sub-sector and industry
- The development of an economy characterized by a technology-based, knowledge-driven industrial sector
- The development of an economy based on a rich pool of highly skilled human resources in critical skill areas relevant for developing and maintaining a competitive edge on the global market
- The development of an economy in which the majority of the working population is either directly or indirectly involved in information and communications related activities
- The development of an economy characterized by a modern educational system within which ICTs are widely deployed to facilitate the delivery of educational services
- The development of an economy in which the provision and delivery of services by Government and its administrative machinery are to a large extent facilitated by information and communications technologies
- The development of an economy based on a literate society with a high proportion of computer literates

#### The Risk Factors

Substantial investment in human resource development (as per the Planned Actions of this sub-plan), without a corresponding improvement in the economy to generate quality jobs, may lead to the brain drain of highly qualified professional and technical expertise from Rwanda. It is envisaged that the Planned Actions identified for implementation in the *Human Capacity Development Sub-plan* will not only lead to meeting the current shortfall in human resources in all key skill areas but will also generate additional human resources in anticipation of the implementation of the other sub-plans of the NICI-2010 Plan which will generate new and additional demands for quality manpower.

For example, the implementation of sub-plans like those relating to e-Government and e-Governance, infrastructure and equipment development, economic development, social development and private sector development, among others, will, apart from boosting the economy, generate additional demand for quality manpower in the medium and long term.

The risk factor therefore only arises in the situation where the supply of manpower (up and above that required for meeting the current shortfall in human resources) is not matched by a corresponding demand generated by the implementation of the other sub-plans that could boost the economy.



## THE SUB-PLAN FOR INFRASTRUCTURE, EQUIPMENT AND CONTENT

### Summary of National Strategy and Policy Linkages of the Sub-plan

#### Relevant Vision for Rwanda (VfR) Mission Strategies

- To improve the information and communications infrastructure of Rwanda
- To transform Rwanda into an IT-literate nation
- To promote and encourage the deployment and utilization of ICTs within the economy and society

#### Relevant Government Policy Commitments

##### *Commitment to Physical Infrastructure Development*

The GOR acknowledges that the level, scale and speed of the socio-economic development envisaged in the *Vision for Rwanda* (VfR) cannot take place without the necessary modern physical infrastructure: roads and general utilities; social infrastructure; telecommunications; and communication infrastructure. The GOR is therefore committed to the rapid development, upgrade, improvement and deployment of the necessary infrastructure in all key areas. In this regard, the development of a reputable geographic information infrastructure will prove an important asset to support the development of the physical infrastructure.

##### *Commitment to the Development and Liberalization of the Telecommunications, Communications and the Mass Media Sector*

The Government is committed to improving communication facilities and to diversifying the means of access through the utilization of appropriate telecommunications systems. The Government, as part of its strategy and commitment to increasing access to telecommunication facilities and facilitating the rehabilitation and strengthening of telecommunication and communication facilities, is also committed to liberalizing the telecommunications and communications sector to encourage both domestic and foreign direct investment and competition in the sector.

The Government, as part of its policy, is committed to promoting information in order to facilitate the achievement of social welfare and to foster national reconciliation and unity. As part of this commitment, the Government will be pursuing a policy of diversifying and improving the quality of information, increasing accessibility to ranges of information and content within and outside the country, and creating a supportive environment for the development of the private press.

#### *Enabling Legal, Regulatory and Institutional Provision*

The GOR acknowledges that the development and the exploitation of ICTs in the economy and society, as well as the development of the information and knowledge economy, will need to be supported and facilitated by appropriate legal provisions and legislation, regulatory framework and provisions, as well as institutional structures. The Government is, therefore, committed to putting in place the necessary policy measures directed at ensuring and enabling legal, regulatory and institutional provisions to facilitate the development of the nation's ICT infrastructure and systems.

#### Relevant ICT4D Policy Expectations

- Support the development of a local ICT industry to facilitate the production, manufacturing, development, delivering, and distribution of ICT products and services
- Support the development of the national information and communications infrastructure
- Contribute to the development and implementation of e-Commerce in Rwanda
- Promote widespread deployment and access to information and communication technologies and resources within the community in both the urban and rural areas of the country
- Contribute to the development and implementation of e-Government, e-Commerce and e-Education in Rwanda.

## Policy Action Items

To implement its ICT4D policy intentions in the area of ICT infrastructure, equipment and content development within the context of facilitating the development of the Rwanda information and knowledge-based economy and society, the Government is committed to implementing specific Planned Actions targeted at achieving the objectives and goals of the following policy action items:

### *Policy Action Item 1: Improve Network Infrastructure*

- Extend coverage of telecommunications networks to reach all areas of the country
- Modernize the telecommunications sector to host new technologies
- Pave the way for emerging telecommunications technologies
- Deregulate and liberalize the telecommunications sector
- Aim for convergence in telecommunications services
- Improve the utilization of fixed land lines
- Provide additional fixed land lines services and options
- Encourage the implementation of wide area networks

### *Policy Action Item 2: Provide Wide Access or “Connectivity for All”*

- Improve the PC penetration rate
- Improve the Internet penetration rate
- Improve the mobile telephone penetration rate
- Diversify the types of access to the Internet
- Encourage the spread of WiFi access in public places
- Increase public access through Multipurpose Community Telecenters (MCTs)
- Increase public access through free Information Access Points (IAPs)
- Spread the above services in the rural areas outside the main towns
- Encourage the convergence of technologies
- Organize the use of domain names
- Raise awareness of all services

### *Policy Action Item 3: Provide Affordable Infrastructural Services*

- Reduce the cost of data access on land lines
- Reduce the cost of high-speed Internet access
- Reduce the cost of leased lines
- Reduce the cost of wireless access
- Reduce above costs for both individuals and institutions
- Make more efficient all cycles of acquiring telecommunications services in terms of turn around time, procedures and requirements
- Reduce taxation on ICT products and services
- Develop schemes for providing free or cheap PCs to the poor and the disparate
- Develop schemes for providing free or cheap Internet access to the poor and the disparate
- Raise awareness of all pricing schemes

### *Policy Action Item 4: Improve Local / International Communications Reliability and Speed*

- Improve local bandwidth for Internet connection
- Increase international bandwidth for Internet connection
- Implement an Internet Hub in Rwanda
- Improve the reliability of all telecommunications
- Introduce technologies that offer higher speeds and capacities

### *Policy Action Item 5: Promote the Establishment of LAN and WAN in Buildings and Compounds*

- Interconnect all public institutions
- Create central and distributed databases

- Promote the use of logical access that is independent from physical access
- Promote e-service delivery points

### *Policy Action Item 6: Promote Private Sector Participation in the Infrastructure*

- Create an enabling business environment to promote private sector participation in the liberalized areas
- Set minimum standards to promote good business ethics in the private sector
- Encourage standards and guidelines to ease the task of the private sector and make acquiring services and products from it more efficient
- Develop partnerships between the public and the private sectors as well as with the civil society in terms of long-term projects

### *Policy Action Item 7: Formulate Standards for the Infrastructure*

- Domesticate international standards to fit the local environmental conditions
- Apply standards and guidelines using modern quality control techniques
- Maintain up-to-date standards

### *Policy Action Item 8: Improve Local Content*

- Give priority to the creation of useful local information, contents and knowledge
- Support all technological innovations related to the conversion of ICTs to Kinyarwanda
- Encourage diversity in language, culture and local knowledge
- Learn from the experiences of other countries that have already commenced on the path of developing local content
- Cover such wide areas as cultural and legacy matter, and official and legal content
- Ensure wide access to local content by making it available in the three languages common in Rwanda: Kinyarwanda, English and French
- Coordinate the effort of local content development to avoid duplication
- Introduce standards and guidelines to ensure high quality of development
- Ensure that such local content is also available for non-Rwandan access, i.e. internationalize the content by translating it into suitable regional or world common languages

### *Policy Action Item 9: Localize Relevant Content*

- Survey and analyze existing content for its need and relevance. This should cover educational, technological, cultural, business and other material
- Encourage the conversion of ICT products and services to Kinyarwanda
- Maintain an interest in such content through promotions and awareness rising mostly through publication in the media and on the Web
- Coordinate the effort of localization to avoid duplication
- Introduce standards and guidelines to ensure high quality of conversion

### *Policy Action Item 10: Rehabilitate, Expand and Modernize Infrastructure*

- Conduct a baseline survey of the different types of the infrastructures to establish status
- Maintain database of competent suppliers and contractors
- Implement automated billing and electronic payment schemes

### *Policy Action Item 11: Liberalize Utilities*

- Provide the institutional requirements to liberalize the various utilities and free them from stringent official and legal requirements
- Prepare legislation in the liberalized areas
- Create Web presence for all utility sectors to enhance transparency
- Enforce rules and regulations in the liberalized utilities

*Policy Action Item 12: Establish Institutional Authorities to Regulate Services*

- Create specific authorities to supervise liberalized areas
- Leverage the institutions to be independent players

*Policy Action Item 13: Provide Universal Access to Infrastructural Services*

- Set up a Universal Access Fund
- Create capacity to manage Universal Access Fund
- Establish transparency and accountability in the management of the Fund

**PLANNED ACTIONS****IEC-2.01: Enhance ICT Infrastructure in the Public Sector**

Type	Hardware Projects
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	This Planned Action corresponds to G3.2, G3.3, G3.4 and GOV-4 of the NICI 2005 Plan
	G3.2: Each Government Ministry, PSO and the Parliament to implement a flexible organization-wide corporate network
	G3.3: Each Government Ministry or PSO to identify and develop for its specific use relevant computer-based applications, information and database systems to support its administrative and service delivery activities
	G3.4: Each Government Ministry or PSO to connect their corporate network to GovNet
	GOV-4: GovNet – The Government Intranet Project
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Second quarter of 2008
Planned Action Ownership	Ministry of Infrastructure
Implementation Agencies	Ministry of Infrastructure in collaboration with Ministry of Local Administration, Community Development and Social Affairs, RITA and all Ministries and agencies

**Planned Action Details***Purpose:*

The goal of this Planned Action is to implement the basic building blocks required for the proper functioning of all the other ICT Planned Actions

*Description:*

Every ICT Planned Action has basic constituents that fall into one of the following categories:

- Communication
- Control (Access Control, Security, Content Protection, etc.)
- Management
- Storage

While it is true that every ICT Planned Action is unique in its requirements and workings, it is also true that all ICT Planned Actions share common characteristics and can operate on top of a shared set of elements.

In order to lower the cost and overheads associated with the various proposed Planned Actions, the Government should establish a common infrastructure to serve as the basic building block.

The infrastructure in summary would be composed of:

1. Government Central Computing Center (GC3)
2. Government Shared Systems and Services (GS3)
3. Government Private Network (GovNet)

**Government Central Computing Center – GC3**

The GC3 is the center for all physical computing resources. It is a high-tech computing center with professional network and hardware infrastructure.

## Government Shared Systems and Services – GS3

The GS3 comprise the following:

### *Directory Service*

- This service identifies all resources on the network and makes them accessible to users and applications. Resources include e-mail addresses, computers, and peripheral devices such as printers.
- Ideally, the Directory Service should make the physical network topology and protocols transparent so that a user on the Government network can access any resource without knowing where or how it is physically connected.
- The service should be based on the X.500 ITU standard, although the standard is so large and complex that no vendor complies with it fully, and should support LDAP.

### *Business Intelligence (Reporting, Data Analysis, and Data Mining) Service*

- Business Intelligence (BI) represents the tools and systems that play a key role in the strategic planning process of the Government. These systems allow the Government to gather, store, access and analyze national and specific data to aid in decision-making.
- Data Analysis allows the use of statistical tools to investigate the collected data sets in order to understand their important characteristics.
- Data Mining looks for hidden patterns in the collected data that can be used to predict future behavior. It does not just change the presentation, but actually discovers previously unknown relationships among the data.

### *Geographical Information System (GIS) Service*

Refer to the GIS Planned Action (IEC-2.02) for more information.

### *Data Service*

This service is composed of two major components:

- Database Management Service
- Document Storage Service
- Archival Service

### *Secure Internet Connectivity Service*

A firewall cluster will provide Internet connectivity to the GovNet users in a secure manner while allowing publishing Web services without compromising the internal network resources.

### *Messaging Service*

Known by most people as e-mail, the Messaging Service allows the various users and user groups on the GovNet to communicate, exchange information and collaborate. In addition, it allows them to interact with the external users over the Internet.

### *Communications Service*

The Planned Action will include Voice over IP to reduce communication costs (VoIP).

### *Web Portal Service*

This service enables two main functionalities:

- Web Content Publishing – for both internal and external (Internet) users
- Collaboration – allowing project teams to collaborate on-line and create shared documents repositories in a simple and efficient way

### *Project Management Service*

This service enables the creation of new project areas allowing Government agencies/ministries to collaborate and manage project resources, timeline and deliverables.

### *Provisioning Service*

This service is used to submit and track requests for access to the above services or for a new allocation within one of these aforementioned services.

### *Phase I – Network and Communication Infrastructure*

GovNet

### *Phase II – Authentication, Directory Services and Provisioning*

Directory Service  
Provisioning Service

### *Phase III – Data Management and Storage*

Database Service  

- Database Management Service
- Document Storage Service
- Provisioning Service (Update)

### *Phase IV – Messaging*

Messaging Service  
Provisioning Service (Update)

### *Phase V – Internet Connectivity*

Secure Internet Connectivity Service  

- Messaging Service (Update)
- Provisioning Service (Update)

### *Phase VI – Portal Services*

Portal Service  

- Web Content Publishing
- Portal Service
- Collaboration

### *Phase VII – Project Management*

Project Management Service  
Provisioning Service (Update)

### *Phase VIII – GIS*

GIS Service  
Provisioning Service (Update)

### *Phase IX – Business Intelligence*

Business Intelligence Service  
Provisioning Service (Update)

### *Phase X – Archiving*

Database Service  

- Archival Service
- Provisioning Service (Update)

#### *Current and On-going Work:*

The Ministry of Justice has implemented a large WAN (costing in the order of US\$2 million).

#### *Budgetary Estimate:*

Category G (between US\$5 million and US\$9 million)



IEC-2.02: The National GIS Center	
Type	Data Projects
Relevant NICI-2005 Plan	<b>This Planned Action corresponds to G6.2 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	G6.2: Ministries to implement suitable GIS applications under the auspices of the National GIS Project to support their administrative and service delivery services
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> Establishment of a center for GIS management shared by all Government entities</p> <p><i>Linkages:</i> All GIS based Planned Actions</p>
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Infrastructure
Implementation Agencies	Ministry of Infrastructure in collaboration with Ministry of Agriculture and Animal Resources, Ministry of Education and Ministry of Health

#### Planned Action Details

##### Purpose:

The purpose of this Planned Action is to establish a National GIS Center to manage and maintain the GIS maps and associated tools that can be acquired by the public to aid decision support. This will standardize these maps and allow the public and the private sector to cut short the effort needed to prepare and use such maps.

##### Description:

The National University of Rwanda (NUR) has a GIS Center. The Center is largely viewed as a seed for the national GIS Center and may be used as a starting point for further strengthening of the mission of such a unit in Rwanda. Even though GIS has been successfully applied in various situations in Rwanda, the following issues remain:

- Maps are incomplete for different usable scales
- Ownership of the maps is not clear as various parties are using different sets
- Lack of support for their use
- Lack of standardization on the use of the maps, both at the application level and at the coordinate conversion system level
- Lack of coordination at the application level

The above problems can be resolved through the current Planned Action. The main purpose would therefore be to establish base maps of the required quality and availability so that the rest of the nation can use them. The Government needs to open up and liberalize the GIS data. This can be achieved by centralizing the task of maintenance and data updating. The Center's main responsibility would also include counsel and advice on the establishment and use of local GIS Centers in institutions that need local processing. The Center would also provide support for the use of such information. There may be added revenue to the Government if the use of such maps is chargeable. This should be a nominal, non-prohibitive charge.

GIS Planned Actions can then be spread over various institutions with the knowledge that the maps are standardized. Different line Ministries and agencies can retain the operation of the GIS system with their responsibility restricted to their individual activities. Another benefit of the widespread use of such maps is that in due course, various agencies may be able to merge data collected as layers over the maps and arrive at relevant decisions. For example, it may be of major benefit to link transportation GIS applications with school distribution.

The principal objectives of the Center will be:

- Create and maintain accurate, appropriate, affordable and up-to-date foundation geospatial information
- Coordinate the harmonization and standardization of data format, and promote the interconnectivity for data-sets standards
- Be responsible for authentic (single and only legally accepted) registration and maintenance of geographic names

and codifications

- Execute and maintain on the national territory the aerial coverage and the establishment, maintenance and publication of foundation maps
- Undertake research and development activities in the domains of geographic information, particularly in applied GIS and Remote Sensing, GPS, mapping and Web-mapping
- Advise and support institutions dealing or benefiting from geospatial data
- Facilitate the access to geographic data to the public, and reduce transaction costs for the sharing of available datasets
- Establish and promote efficiency of key partnerships between administrative bodies, cities, Academia and the private sector
- Create and maintain a documentation and archive center
- Ensure and maintain expertise in the domains of geospatial information by providing specialized trainings
- Supervise capacity-building and education in the fields of geo-information
- Serve as a regional outreach center in the fields of Geographic Information Systems and Remote Sensing to encourage regional applications

Institutions that may require GIS processing are the following:

- The National Institute of Statistics (NIS)
- The Ministry of Agriculture
- The Military and the internal security forces
- The Ministry of Education
- The Ministry of Infrastructure

##### Benefits of the Planned Action:

##### Government – Direct

- Save money by sharing the costs of data production, and reducing duplicative efforts
- Develop applications faster and more easily by using existing data or data-development standards, guidelines and tools
- Improve donor satisfaction through providing better data, faster response times, and improved operations
- Provide better data for decision-making
- Save development effort by using framework data standards
- Utilize data produced by others more quickly by using common formats and access methods
- Resolve problems created by conflicting data
- Redirect resources associated with duplicate data production and maintenance to other activities
- Perform analyses, decision-making, and operations in cross-areas
- Expand market potential and program-funding through recognition and credibility

##### NGO/Private Sector – Direct

- Standards-based/Consistent/Reliable Single Point of Access
- Better Support for Informative Decision-Making

##### Citizens – Indirect

##### Sectors – Examples

##### Education

- Use integrated data to reveal trends and relationships
- Map linguistic, ethnic and cultural traits

##### Health

- Assessment of environmental factors promoting disease transmission
- Change detection analysis to find temporal patterns
- Epidemiologic Applications  
Analysis of disease distribution

##### Environmental risks

- Analysis/Reporting of geographic variation by disease
- Progress/Improvement analysis and reporting

*Examples of Quantifiable Benefits:*

- The time required for producing mailing labels for notifications, a capability required by many departments (e.g. Assessing, Public Works, Planning, Traffic, etc.), drops from days to minutes. This saves at least 500 hours staff time annually.
- When requiring an RFP for some fieldwork, it is difficult to ask for a bid without giving the amount of area to be operated on. Using GIS enables identification of all the areas, and then use of the base maps available through GIS enables identification and calculation of the total work area. The only other way to get an area would be to go out and physically measure it. It is estimated that it would cost US\$5,000 to US\$10,000 to have a surveyor do this work.
- The GIS provides map features for use in engineering drawings, instead of creating the same information from scratch every time. This saves an excess of 80 person-hours annually.

*Current and On-going Work:*

On November 6, 2004, the Prime Minister instigated a Ministerial Commission to carry out a study into the usage of GIS within Rwanda (Reference Number 1466/03.4).

The commission presented its final report on July 7, 2005. The report recommends the establishment of a “Central Cleaning House” in the short term, and a “National Geographic Institute” in the long term.

*Risks:*

- Unsuitable capacity
- Entities developing maps outside the base maps
- Data acquisition/production and quality assurance

*Budgetary Estimate:*

Category D (between US\$800,000 and US\$1,000,000)

*Schedule:*

Phase 1: Establish the entity to handle the base map preparation (around two months).

Phase 2: Acquire the related technologies for the entity (around three months).

Phase 3: Train the unit staff and establish work procedures (around three months).

Phase 4: Commence with the mapping of Rwanda (one year).

Phase 5: Publish and maintain the maps for use by various GIS users.

**IEC-2.03: Public Sector Data Dictionary and Data Exchange**

Type	Institutional Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> To establish the Board would be a primary Prerequisite. Another would be the establishment of technological standards to be used in the exchange</p> <p><i>Linkages:</i> All Government Data Planned Actions</p>
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	RITA
Implementation Agencies	RITA in collaboration with All Ministries and Agencies, and the Private Sector Federation

**Planned Action Details**

*Purpose:*

To instigate a process whereby data that is owned by one Ministry or agency can be made available, under specific conditions, to either the citizen or other Ministries and agencies.

*Description:*

In the past, two practices were followed when data had to be exchanged or used between two different parties. In the manual case, Party 2 would proceed to set up and maintain its own data whereas the true owner is Party 1, which already has a database of the same. In the automated case, data exchange between two computer systems was carried out by technical specifications between the two ICT units that resulted in software changes in the applications on both sides. The technical Planned Actions were unwieldy and non-standardized. Communications were varied and non-standardized. The result was a general discouragement with such techniques of Electronic Data Interchange (EDI).

The problems resulting from the above are:

- Duplicated databases
- Multiple and non-standardized codification
- Lack of ownership and hence disputes as to the consistency of the data
- Inefficient exchange of data

A Planned Action has emerged and is now becoming an international standard. It relies on the use of XML and Web Services.

A major stumbling block was the lack of legal frameworks allowing agencies to publish their work in such a manner that other agencies can use it in an official manner. The framework can be implemented by setting up a Data Exchange Control Board (DECB) whose main responsibilities would be to define the standards and facilitate the exchange.

The objectives of this Planned Action are:

- For each agency to have clear ownership of its own data
- For each agency to publish its data (in full or in part) for others to use under specific conditions

The technological Planned Action is summarized as follows:

Step 1: The local data or the data within a specific Ministry or agency that can be published needs to be identified. For example, the Traffic Department can be recognized as the owner of the vehicle records in Rwanda.

Step 2: The Ministry or agency that identifies its own data would then present this data dictionary to the DECB. This board has the responsibility of verifying the validity of the data and the completeness of the definition. Once that is approved, the data becomes officially publishable.

Step 3: The Ministry or agency that has an approved set of data elements to be published can now prepare the necessary technical set-up for publishing this data. This is achieved by using Web services. Web services allow organizations to communicate data without intimate knowledge of each other's ICT systems behind the firewall and without time-consuming customized programming.

Step 4: An agency can check or authenticate a specific record found in another agency. It can also access such data in a read-only manner adding its own fields in its own database if it needs to. This can be achieved using Web services without needing to consult with the originating agency. Conditions restricting the use can be built in to ensure that only authorized parties can access the data.

The above data exchange Planned Action can be used in various Planned Actions such as:

1. Publishing data in the public domain: statistics, information regarding projects, etc. These can be published in a manner that citizens, companies and public sector agencies can use. For example, a company can import into its system a variety of information published by the National Bureau of Statistics in the Ministry of Finance.

2. Using inter-agency data to authenticate records: all the registers discussed in a separate Planned Action such as the citizen ID, educational levels, real estate, etc.

3. Using inter-agency data to inquire about specific information. Invariably, companies, citizens and public sector agencies require information held on Government databases. Examples include banks requiring an analysis of the real estate ownership of a loan applicant, or a doctor may inquire from the Ministry of Health the medical history of a particular citizen.

4. Complete workflows that require hopping from one agency to the other. For example, if the citizen is required to authenticate an educational degree in a Municipality, this can easily be carried out by allowing the Municipality access to the educational records of the Ministry of Education.

#### *Benefits of the Planned Action:*

- Transparency, as data becomes more public than before
- Efficiency, as the effort to manually exchange data will be reduced
- Reduction of errors, duplicated databases and inconsistent codification
- Accountability as Ministries and agencies become recognized owners of specific data

#### *Risks:*

- Ministries or agencies will still resort to processing their own databases without exposing them to the Board
- Different technological standards may be implemented

#### *Budgetary Estimate:*

Category A (Less than US\$200,000)

#### *Schedule:*

Phase 1: Define the terms of reference for the Board and to institutionalize and launch it (around two months).

Phase 2: Survey all Ministries and agencies and define their data dictionaries (one year).

Phase 3: Proceed with exchange activities.

The Planned Action proposes the conversion of a variety of tools and Planned Actions from their native language (usually English or French) into Kinyarwanda. The following are to be considered:

- Operating Systems
- Office productivity tools
- Printers that can handle the Kinyarwanda script

In due course, the software industry will follow by providing applications with the Kinyarwanda interface.

#### *Budgetary Estimate:*

Category B (between US\$200,000 and US\$500,000)

### IEC-2.05: Improve Electrical Power Quality

Type	Material Projects
Relevant NICI-2005 Plan	This Planned Action is an aspect of I 2.4 of the NICI-2005 Plan
Roll-over Planned Actions and Initiatives	I 2.4: Implement program for the rehabilitation, expansion and upgrade of the national telecommunication infrastructure
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	Ministry of Infrastructure
Implementation Agencies	Ministry of Infrastructure

#### *Planned Action Details*

##### *Purpose:*

To improve the quality and availability of power.

##### *Description:*

One of the key concerns of computer users is the continuity and quality of the electrical power. Continuity in the main towns is an issue. This becomes a question of availability in areas outside the main towns. This is a national issue of concern. The effect is being felt by computer users, namely the increased costs needed to pay for UPS units and supplementary generator power. Furthermore, the regular interruption of power leads to burnouts on power supplies and other units, not to mention the loss of service and connectivity.

A related but equally crucial issue is the quality of power and the regulations needed for its use. The following is recommended:

- Require buildings to have proper earth links as a third line
- Require buildings to have lightning protection

These two requirements will avoid excessive disruptions and costs due to damaged units facing unacceptable power fluctuations and spikes.

#### *Benefits of the Planned Action:*

- Uninterruptible work
- Reduced costs (UPS and burnt out units)
- Rural access to computing facilities

#### *Current and On-going Work:*

Improvement is being introduced

#### *Budgetary Estimate:*

Category F (between US\$3 million and US\$5 million)

#### IEC-2.06: Increase Government's Yearly ICT Budget

Type	Institutional Projects
Relevant NICI-2005 Plan	This Planned Action corresponds to G2.5 of the NICI-2005 Plan
Roll-over Planned Actions and Initiatives	<b>G2.5:</b> All Government Ministries, PSOs and Parliament to develop annual IT Budgets (within the time-frame of NICI-2005) to implement their respective IT Plans
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2006
Planned Action Ownership	Ministry of Finance and Economic Planning
Implementation Agencies	Ministry of Finance and Economic Planning

#### Planned Action Details

*Purpose:*

To slowly introduce spending on ICT as part of the regular Government budgeting items and improve the adoption of ICT Planned Actions in Government work.

*Description:*

Government spending on information technology has been rising over the last few years. Nonetheless, most of the funding for ICT has been originating from foreign aid and very little of the Government's budget is dedicated to

ICT. Rwanda has been increasing its ICT expenditure over the years. However, this does not seem to be sufficient to address the current requirements of NICI-2010.

In light of the need to be less dependent on international aid and to introduce improvements in the efficiency and effectiveness in allocating resources in Government budgets in the future, it is important for the Government to start incorporating ICT into the budgets as an item that would improve the services to the citizen. Evidently, the use of ICT in Government is not a temporary trend and it will, most likely, increase in the future. Adopting it as part of the budget is a step forward to realizing its benefits.

To implement such a strategy requires various approaches. One of these would be to launch strategic ICT planning within each Ministry and agency. This has been presented as a separate Planned Action. Another would be to concentrate on implementing e-Government Planned Actions.

*Budgetary Estimate:*

Category A (Less than US\$200,000)

#### IEC-2.07: Use Media to Promote ICT

Type	Consulting Projects
Relevant NICI-2005 Plan	<b>This Planned Action corresponds to E4.2 and E4.3 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	<b>E4.2:</b> Put in place an initiative to use the mass media (radio, TV and the print media) to inform and educate the public on the <i>Vision for Rwanda</i> (VfR) and the role that the GOR's ICT policies, strategies and plans are going to play towards the realization of this Vision <b>E4.3:</b> RITA, in collaboration with the GOR Information Service, to organize regular public forums, meetings, seminars and workshops as a public awareness and education exercise on ICTs and the <i>Vision for Rwanda</i> (VfR)
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Office Rwandais d'Information
Implementation Agencies	Office Rwandais d'Information in collaboration with the media, RITA and Rwanda ICT Association

#### Planned Action Details

*Purpose:*

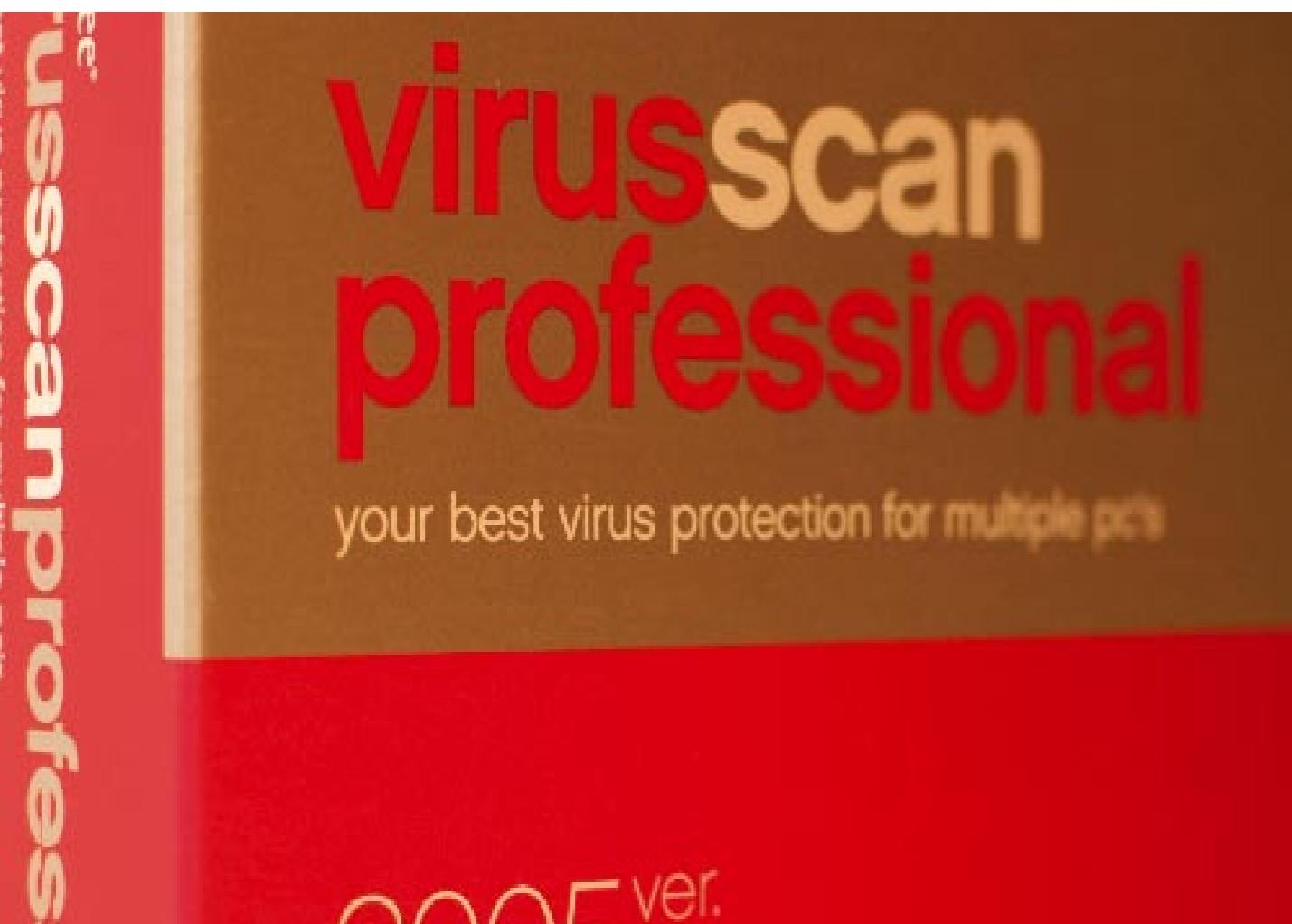
To use all media (radio, newspapers and TV) to promote ICT in various ways. Education would be a key aim. Furthermore, this would ultimately create new interest in the field and encourage entrepreneurship and creativity.

*Description:*

Rural areas and even the urbanized areas outside Kigali are at a disadvantage. The media needs to be more accessible in such areas. They can then be used as the medium for promoting ICT.

The aspects of ICT to be aired are the following:

- Educational material that introduce PCs, the Web and related technologies to the young, the uneducated and the distant professionals
- Educational material that introduces technologies of use to various sectors such as health, education and agriculture
- Promoting websites that have interesting content for such areas
- Promoting ICT events
- Supporting Ministry of Education ICT syllabi



- Supporting ICT certification programs
- The latest trends in ICT
- Exposing ICT experiences in developed and regional countries
- Promote the organizations that have shown ICT excellence or have won awards in this field

The show will also host both local and international guests that work in the field, enabling field and users of technologies. There would be a focus on Rwandan products, inventions and successes.

The Planned Action can depend on the private sector to a large extent, as they would benefit from the additional exposure. However, the Government should back the Planned Action by reducing airing costs.

*Budgetary Estimate:*

Category D (between US\$800,000 and US\$1,000,000)

**IEC-2.08: Launch Project for the On-going Collection and Publishing of ICT Data**

Type	Consulting Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Third quarter of 2007
Planned Action Ownership	RITA
Implementation Agencies	RITA, in collaboration with National Computer Center, National Bureau of Statistics, and the Human Resources Development Agency (HIDA)

**Planned Action Details**

*Purpose:*

To assign an entity that is responsible for gathering and publishing data about the ICT sector.

*Description:*

The ICT sector is the economical base of the digital economy. This small sector is rapidly growing but its growth is unfocused. Knowledge of the sector is poor because there is a general lack of information. Planning and monitoring the behavior of this sector is therefore not possible as with other major sectors in Rwanda. One of the main problems faced in NICI I was the lack of reliable and up-to-date data about the ICT sector. Various sources provided contradictory and unsuitable data. It is important to maintain data about the ICT sector. This would help the private sector and the Government to recognize their challenges and opportunities. ICT companies are not homogeneous in nature. ICT activities encompass the communications giants as well as the whiz kid working from his garage. ICT companies include mobile operators, software developers, handset retailers, PC importers and distributors, ISPs, graphic design shops designing Web pages, etc.

The entity would need to gather and continuously update such data as the following:

- Classification of companies
- Employment figures showing the total workforce by job classification inside and outside the sector
- Products
- Services
- Technologies
- ICT education
- Densities and penetration rates of various products and services

- Other indicators will need to be established
- Number of graduates per ICT field per year of graduation
- Unemployment of ICT personnel
- Financial information
- Export and import figures for ICT products

One of the main benefits of rigorous collection of such data is the monitoring of trends. Another would be the ability of Rwanda to publish its data with international organizations such as the International Telecommunication Union (ITU).

The survey would provide a baseline for:

- Total revenues of ICT companies
- Share in GNP
- Revenue due to export
- Share in the national export
- Share in the national import

The effort is needed because:

- Knowing the size of the sector and its contribution to the GDP will lead to a better evaluation of its national importance
- Analyzing the challenges and opportunities of the sector requires knowledge of its behavior and levels of expertise
- Government policies that relate to communications, taxation, encouragement of investment and other issues, require a firm quantitative knowledge of the sector
- Donor funding is a major input to the sector. It is therefore important to provide donors with accurate information about the sector
- In order to better place Rwanda on the international map, it is important to have up-to-date and valid information about the sector

On a regular basis, recommendations will be drafted based on the collected and analyzed information. The project will help the ICT sector disseminate the recommendations and findings and will provide the necessary coordination with the various agencies concerned (Commercial Register, Ministry of Economy, Chamber of Commerce, etc).

*Budgetary Estimate:*

Category A (Less than US\$200,000)

**IEC-2.09: The Citizen's Guide to Road and Transportation Information**

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Infrastructure
Implementation Agencies	Ministry of Infrastructure in collaboration with Ministry of Internal Affairs, National Police, RITA, And National Civil Society Platform

## Planned Action Details

### Purpose:

To provide the citizen with a comprehensive guide to the various practices of transportation, the state of the roads, and related issues.

### Description:

The state of transportation in Rwanda today is near critical. Despite major efforts by the Ministry of Transport, the Ministry of Interior, Municipalities and other agencies indirectly involved, it suffers from the following:

- A large proportion of vehicles that are neither mechanically suitable nor equipped with the right safety measures
- A lack of proper traffic signs and signals, and a regular misuse of them
- The state of roads that is liable to cause damages to vehicles as well as be a safety hazard
- An inefficient insurance scheme that does not properly cover the citizen
- Irregular public transport

Even though the Planned Action related to addressing transport problems is not in the realm of ICT, the latter can be used to create the necessary awareness and respect for such laws. Furthermore, ICT can be a basis for providing citizens with much related and useful information otherwise not easily accessible. This Planned Action proposes the establishment of an entity that maintains a website with the aim of guiding the citizens in all matters related to transportation:

- The laws and regulations governing such issues as vehicle registration, sale and purchase of vehicles, driving licenses, traffic laws and the use of the road system
- Insurance rules and regulations
- Awareness campaigns related to specific issues such as laws regarding seat belt usage, fire extinguishers, use of mobiles while driving, etc
- Good driving practices
- Good practices related to driving and the environment: littering, emission control, car graveyards, etc
- Good vehicle maintenance practices
- Road and weather conditions



- Public transport schedules, locations and pricing
- Related services such as garages, insurance, car rentals, etc
- Announcements of car pools that would reduce the expenses of a citizen whilst simultaneously reducing traffic
- Classified ad section for the sale and purchase of second hand vehicles
- Etc

The above can be complemented by an on-going media campaign highlighting the main issues on the related Web.

A final and major recommendation would be to merge the information on driving licenses with the Smartcard proposed by the Ministry of Interior. This reduces the need to carry several IDs. The entity and the website can be sponsored by private sector parties such as vehicle traders, insurance companies and major public transport firms.

### Budgetary Estimate:

Category A (Less than US\$200,000)

## IEC-2.10: Increase International Bandwidth

Type	Institutional Projects
Relevant NICI-2005 Plan	This Planned Action is an aspect of I 3.1 of the NICI-2005 Plan
Roll-over Planned Actions and Initiatives	I 3.1: The Rapid National Broadband Backbone Development Facilitation Initiative
Planned Action Prerequisites and Linkages	Prerequisites: None Linkages: None
Planned Action Due Date	Second quarter of 2006
Planned Action Ownership	Ministry of Infrastructure
Implementation Agencies	Ministry of Infrastructure in collaboration with RITA; and Telecom Operators

## Planned Action Details

### Purpose:

Rwanda needs more international bandwidth for voice and data circuit. The current data international bandwidth is 0.04Gbps. If Rwanda intends to be internationally e-ready, it needs to increase bandwidth.

### Description:

Rwanda is losing income because of the restricted international bandwidth. Increased bandwidth would result in the following revenue opportunities:

- It would encourage ICT companies to sell their products and services regionally: ASP, software applications, etc.
- Regional services provided by Rwandan sites can be made available at better connections (banking, auctions, e-Commerce, general information)

Furthermore, if ISPs were given reduced rates for their international connections, this would be reflected in lowered subscription rates, leading to increased Internet penetration.

It is proposed that an increase of 0.1Gbps should be acquired over the next two years. This increase would be enough to cater for the increased access demand by the widening penetration of the Internet, at least over the next five years.

### Budgetary Estimate:

Category A (Less than US\$200,000)

IEC-2.11: Optical Fiber Network on the Infrastructure of Electrogaz	
Type	Hardware Project
Relevant NICI-2005 Plan	This Planned Action is an aspect of I 3.1 of the NICI-2005 Plan
Roll-over Planned Actions and Initiatives	I 3.1: The Rapid National Broadband Backbone Development Facilitation Initiative
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> Regulatory authority enact rules and regulations to control all the players in the industry</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	Electrogaz
Implementation Agencies	Electrogaz in collaboration with the Ministry of Infrastructure

#### Planned Action Details

##### Purpose:

The implementation of an Optical Ground Wire (OPGW) network to improve the quality of telecommunication links for the entire national grid system.

##### Description:

Engineering and design, supply and installation, testing and commissioning of an Optical Fiber Cable Communication and SCADA System which is the acronym for Supervisory Control and Data Acquisition. The term refers to a large-scale, distributed measurement (and control) system. SCADA systems are used to monitor or to control chemical, physical or transport processes.

##### Benefits of the Planned Action:

- Enhance Power Distribution Management capability
- To provide a backup network in case of overloads on other networks

##### Budgetary Estimate:

Category H (between US\$9 million and US\$15 million)

#### IEC-2.12: The National Communications Master Plan

Type	Consulting Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> Coordination with other plans such as infrastructural planning, needs to be in place.</p> <p><i>Linkages:</i> IEC-2.01. Enhance ICT Infrastructure in public sector</p>
Planned Action Due Date	Second quarter of 2007
Planned Action Ownership	Ministry of Infrastructure
Implementation Agencies	Ministry of Infrastructure in collaboration with Rwanda Utilities Regulatory Agency and the Ministry of Local Government, Good Governance, Community Development and Social Affairs

#### Planned Action Details

##### Purpose:

To draw a ten year Master Plan for the Communications sector.

#### Description:

The communications sector needs long term planning. Since communications are going to be at the heart of the NICI-2010 and probably, the later phases, it becomes urgent for Rwanda to develop a long-term master plan for this sector. This master plan would affect all other sectors and would need to be a Prerequisite of their plans. Such areas as infrastructure, new technologies, bandwidth, regional cooperation (hubs, cables, etc) and other aspects need to be defined and planned for.

#### Benefits of the Planned Action:

The Planned Action has several benefits:

- Ensure that all requirements are in place before other sectors start depending heavily on communications
- Ensure that all capacities are reasonable and are implemented at the right time with the right costs
- With proper planning, Rwanda may become the communications hub of the region thus reaping revenues and other benefits

#### Current and On-going Work:

The TOR regarding the consultancy for drawing the Communications Master Plan is being drafted.

#### Risks:

- Delay for recruitment of the Consultant
- Short-term thinking

#### Budgetary Estimate:

Category B (between US\$200,000 and US\$500,000)

#### IEC-2.13: Karisimbi Integrated Energy and Communications Project

Type	Hardware Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> Coordination with the Communications Master Plan</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	Ministry of Infrastructure
Implementation Agencies	Ministry of Infrastructure in collaboration with national and international broadcasting stations, Telecom operators and the Rwanda Revenue Authority

#### Planned Action Details

##### Purpose:

To provide a multipurpose ICT system to facilitate the provision of associated services in Rwanda, COMESA and the Great Lakes region.

##### Description:

This Planned Action covers the supply, installation and commissioning of broadcasting, ICT, Telecom, WiMax, Air Navigation Surveillance and Frequency Management systems at the Karisimbi high altitude mountain and the associated services.

##### Benefits of the Planned Action: The following benefits will result from this Planned Action:

1. Broadcasting for TV and radio.
2. Air traffic management.

3. The introduction of broadband including WiMAX (this stands for Worldwide Interoperability for Microwave Access, a certification mark for products that pass conformity and interoperability tests for the IEEE 802.16 standards. WiMAX is a standards-based wireless technology that provides high throughput broadband connections over long distances. WiMAX can be used for a number of applications, including “last mile” broadband connections, hotspots and cellular backhaul, and high-speed enterprise connectivity for business).
4. The improved use of geographic information systems.
5. The facilitation of multi-purpose community telecenters and their related private services.
6. The possibility of managing the Rwanda Revenue Authority customs tracking system.
7. Improved meteorological information.
8. The easy launch of databank centers such as call centers, e-Government and SCADA (which is the acronym for Supervisory Control and Data Acquisition). The term refers to a large-scale, distributed measurement (and control) system. SCADA systems are used to monitor or to control chemical, physical or transport processes.
9. On-line payments.
10. Tourism on the Net.

*Current and On-going Work:*

Installation of electrical power and optical fiber cable.

*Budgetary Estimate:*

Category G (Between US\$5 million and US\$9 million)

the germination of new ideas and products, the ICT Park can also act as an incubator. This Planned Action covers both aspects under one agency. The services can be provided by the staff of the Park as well as by visiting consultants and members of the ICT Sector.

The following is a broad list of typical services:

- Coordinating the relationship between students interested in ICT careers and universities for both admission as well as internship
- Conducting seminars and workshops on ICT-related subjects
- Mentoring and assistance in the preparation of the proper business plans for ICT ventures
- Provision of consulting services to the private and public sectors
- Launching research projects to be completed under the auspices of the ICT Park
- Providing various discounted supplies and services to growing companies and developing individuals such as legal services, software, computer supplies, printing and copying, etc
- Provision of offices, meeting spaces and working environments on short term basis for projects that enhance the ICT sector
- Provision of various onsite facilities for use of members such as Internet access, networks, video conferencing, projection units, etc

Essentially, the ICT Park would be funded by the Government of Rwanda. However, donors should be encouraged to assist the growth of the ICT Sector through suitable support of the ICT Park. The Park can also reap revenues by charging nominal fees for its various services.

IEC-2.14: Development of an ICT Park and Incubator	
Type	Institutional Project
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	<p><b>This Planned Action corresponds to E8.8 and P3.3 of the NICI-2005 Plan</b></p> <p><b>E8.8:</b> Universities and colleges to facilitate the setting-up of Campus Companies/units or industrial facilities and parks to serve as incubators for ICT-related production and service provision activities</p> <p><b>P3.3:</b> Implement a National Project to set up pilot public STPs in public institutions like NUR, KIST and in specially established Technology, Research and Development Parks</p>
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	RITA
Implementation Agencies	RITA in collaboration with the Ministry of Infrastructure and the Rwanda Investment and Export Promotion Agency

**Planned Action Details**

*Purpose:*

To create an ICT Park and Incubation facility in Rwanda.

*Description:*

Telecom House, the building that RITA is currently in, has been assigned by the Government of Rwanda to be an ICT Park. In collaboration with the local technology educational organizations, it is envisaged that students are pre-incubated at facilities within their schools, institutes, universities and colleges, and then move into the ICT Park incubation facility to further develop and grow their fledgling business ideas.

The ICT Park aims at providing a variety of services to individuals as well as to the private sector. However, it should be strongly partnered with the private sector to ensure the fast transfer of technology. As a ground for



***Benefits of the Planned Action:***

- Improved technology transfer
- Increased employment
- Better assessment of future employees through visibility of emerging talents by the private sector
- Export revenue generation for Rwanda from spin-offs in the Park
- Encouragement of foreign companies wishing to start up in Rwanda through assistance and support by the Park

***Current and On-going Work:***

Scoping is in progress, with several experienced organizations being canvassed. Project proposal preparations are beginning.

**Risks:** Insufficient funding.

***Budgetary Estimate:***

Category D (Between US\$800,000 and US\$1,000,000)

**IEC-2.15: Managing the Top Level Domain of Rwanda**

Type	Institutional Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> To put in place RICTA capacity-building</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Fourth quarter of 2006
Planned Action Ownership	RITA
Implementation Agencies	RITA in collaboration with the Rwanda ICT Association and Telecoms Operators

**Planned Action Details*****Purpose:***

Rwanda does not manage the top-level domain of .rw at this stage. The purpose of this Planned Action is to have the domain and its assignment managed from within Rwanda.

***Description:***

The Country code Top-Level Domain (ccTLD) of .rw is currently managed by private operators outside of Rwanda. In order to provide fair and quick access to assignments of the domain, it is best that this domain be run by an agency within Rwanda. This will lead to a popularization of the .rw extension and would make Rwandan websites more easily recognizable.

***Benefits of the Planned Action:***

- Quicker allocation of domain names
- Inspection of duplicate names and similar names to ensure fair allocation
- Correspondence between commercial registry and domain names

***Current and On-going Work:***

Setting up RICTA equipment installation.

***Budgetary Estimate:***

Category A (Less than US\$200,000)

**PLANNED ACTIONS ROLLED OVER FROM THE NICI-2005 PLAN****IFR-1: Initiatives to Liberalize the Communication Sector and to Facilitate Universal Access to ICT Infrastructure and Services**

Program Ownership	Ministry of Infrastructure
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To promote and facilitate modern physical infrastructure development, expansion and upgrade in areas like roads and general utilities, social infrastructure, telecommunications, and communication infrastructure</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To diversify the means of access through the utilization of appropriate telecommunications and communication systems</li> <li>• To increase access to telecommunication and communication systems and facilities</li> </ul>

**I1.2**

***Plan-Specific Actions:*** Develop and implement a program to facilitate universal access to basic and value-added communications services.

***Prerequisites:*** None

***Plan-Action Linkages:*** None

***Time-Bound Measurable Targets:*** Develop a policy and program on universal access to basic and value-added communication services by 2006. Implement and monitor the impact of the program during the NICI-2010 time frame.

***Planned Action Implementation Agency:*** Ministry of Infrastructure, RURA.

***Status:*** Work in progress.

**I1.3**

***Plan-Specific Actions:*** Develop and enforce universal access and rural connectivity obligations within communication service-operator licenses.

***Prerequisites:*** None

***Plan-Action Linkages:*** None



**Time-Bound Measurable Targets:** Enforce and monitor during the NICI-2010 Plan time-frame compliance with universal access obligations stipulated in Communication Service Provision Licenses granted to operators.

**Planned Action Implementation Agency:** Ministry of Infrastructure, RURA.

**Status:** Work in progress.

#### I1.4

**Plan-Specific Actions:** Develop and implement program to diversify and improve the quality of information, and access.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Develop policy and program on universal access to basic and value-added communication services by the fourth quarter of 2006. Implement and monitor the impact of the program during NICI-2010 Plan time frame.

**Planned Action Implementation Agency:** Ministry of Infrastructure.

**Status:** Work in progress.

**Planned Action Implementation Agency:** Ministry of Energy, Water and Natural Resources, Electrogaz.  
**Status:** Work in progress.

#### I2.4

**Plan-Specific Actions:** Implement program for the rehabilitation, expansion and upgrade of the national telecommunication infrastructure.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** On-going rehabilitation, expansion and upgrade of the existing national telecommunication infrastructure to be completed by 2008.

**Planned Action Implementation Agency:** Ministry of Infrastructure, Rwandatel, and other Telecom and communication service operators and providers.

**Status:** Work in progress.

#### I2.5

**Plan-Specific Actions:** Develop and implement a comprehensive program for rural roll-out of telecommunication and communication infrastructure and services.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Develop a comprehensive program to install public telephone access systems and mini-telecenters in rural communities (local trading shops, schools, local administration units, hospitals post offices, etc) by 2007. Implement program to achieve 80% coverage of medium to high-density rural communities by 2008. Achieve 100% coverage of medium to high-density rural communities by 2010.

**Planned Action Implementation Agency:** Ministry of Infrastructure, Rwandatel, and other Telecom service operators.

**Status:** Work in progress.

#### I2.8

**Plan-Specific Actions:** Government to formulate and implement a special initiative aimed at spreading Internet access by promoting and facilitating the development of a competitive and vibrant ISP environment in Rwanda.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Ministry of Public Works, Transport and Communication in collaboration with other relevant Government agencies to formulate and implement this special initiative by 2007.

**Planned Action Implementation Agency:** Ministry of Infrastructure.

**Status:** Work in progress.

#### IFR-2: Initiatives to Expand, Rehabilitate and Upgrade the Existing ICT Infrastructure

Program Ownership	Ministry of Infrastructure
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To promote and facilitate modern physical infrastructure development, expansion and upgrade in areas like roads and general utilities, social infrastructure, telecommunications and communication infrastructure</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To develop, upgrade, improve and deploy ICT infrastructure in key areas</li> <li>To facilitate the rehabilitation and strengthening of telecommunication and communication facilities</li> </ul>

#### I2.1

**Plan-Specific Actions:** Implement program of National Road Network, expansion, rehabilitation and upgrade.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Carry out on-going expansion, rehabilitation and upgrade of the National Road Network during the NICI-2010 Plan time frame.

**Planned Action Implementation Agency:** Ministry of Infrastructure.

**Status:** Work in progress.

#### I2.2

**Plan-Specific Actions:** Implement program to privatize road maintenance and set up a road maintenance fund.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Privatize road maintenance by 2007. Set up a Road Maintenance Fund by 2007.

**Planned Action Implementation Agency:** Ministry of Infrastructure.

**Status:** Work to start.

#### I2.3

**Plan-Specific Actions:** Develop and implement a comprehensive urban and rural electrification program.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Develop a program for urban and rural electrification by the fourth quarter of 2006. Target to achieve at least 75% coverage of electricity in urban areas by 2010 and at least 50% coverage of electricity in rural areas (medium and high density rural settlements) by 2010.

#### IFR-3: Fast Track National Communications Infrastructure Development Initiative

Program Ownership	Rwanda Investment Promotion Authority (RIEPA) and Ministry of Infrastructure
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To promote and facilitate modern communications infrastructure development, expansion and upgrade</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To provide a fast track to the development of the national communications backbone</li> </ul>

#### I3.1

**Plan-Specific Actions:** The Rapid National Broadband Backbone Development Facilitation Initiative. **Note:** This initiative is to promote the rapid development of an advanced broadband communication backbone infrastructure for Rwanda through private investment. The initiative will make it possible for any company or organization wishing to invest in the building of a section of the national communication backbone using advanced broadband

technologies to be free to do so without the need for securing a license or going through a lengthy process of authorization.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* RIEPA, in collaboration with MININFRA, to develop by the fourth quarter of 2006 an attractive and competitive investment promotion package and incentives to facilitate the implementation of the Rapid National Broadband Backbone Development Facilitation Initiative. RIEPA to promote aggressively the Rapid National Broadband Backbone Development Facilitation Initiative, domestically and internationally.

*Planned Action Implementation Agency:* Ministry of Infrastructure and the Rwandan Investment and Export Promotion Authority (RIEPA).

*Status:* Work in progress.

### I3.2

*Plan-Specific Actions:* Develop and implement an ICT infrastructure development initiative specifically directed at promoting and encouraging both domestic and foreign investment into the development of a high-speed broadband communication infrastructure to specifically support offshore software development activities and ICT out-sourcing services in Rwanda. *Note:* This will be a special rapid infrastructure development initiative aimed at promoting a fast track method to encourage both local and foreign companies to invest in high-speed broadband communication infrastructure development with minimum bureaucracy and regulations.

*Prerequisites:* None

*Planned Action Linkages:* P7.4

*Time-Bound Measurable Targets:* RIEPA, in collaboration with the Ministry of Finance and Economic Planning, to put in place and implement a special investment promotion package to encourage high-speed broadband communication infrastructure development to support offshore software development activities and ICT out-sourcing services in Rwanda by 2007.

*Planned Action Implementation Agency:* RIEPA, Ministry of Finance and Economic Planning.

*Status:* Work in progress.



### INFRASTRUCTURE, EQUIPMENT AND CONTENT SUB-PLAN: THE IMPLEMENTATION SCHEDULE OF THE PLANNED ACTIONS

Planned Actions	2006				2007				2008				2009				2010			
	Q1	Q2	Q3	Q4																
IEC-2.01																				
IEC-2.02																				
IEC-2.03																				
IEC-2.04																				
IEC-2.05																				
IEC-2.06																				
IEC-2.07																				
IEC-2.08																				
IEC-2.09																				
IEC-2.10																				
IEC-2.11																				
IEC-2.12																				
IEC-2.13																				
IEC-2.14																				
IEC-2.15																				
I1.2 (1)																				
I1.2 (2)																				
I1.3																				
I1.4 (1)																				
I1.4 (2)																				
I2.1																				
I2.2																				
I2.3 (1)																				
I2.3 (2)																				
I2.3 (3)																				
I2.4																				
I2.5 (1)																				
I2.5 (2)																				
I2.5 (3)																				
I2.8																				
I3.1																				
I3.2																				

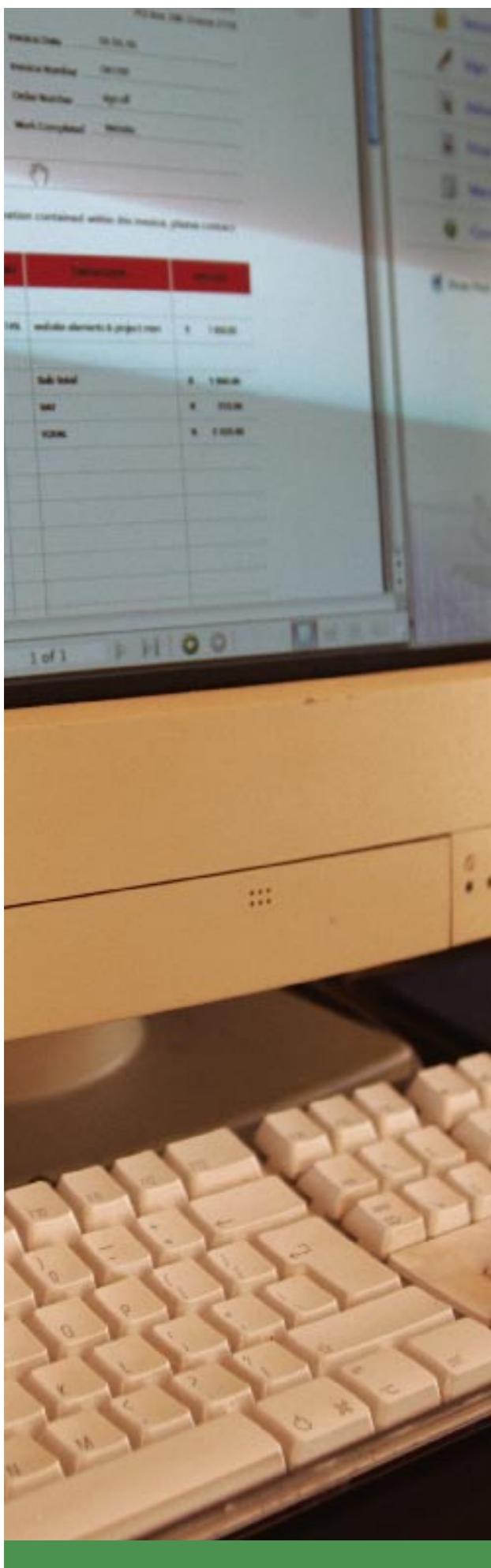
### MULTI-SECTORAL ECONOMIC DEVELOPMENT AND ICT-2020 POLICY IMPLICATIONS, AND RISK FACTORS OF THE SUB-PLAN

Possible Contributions to the Realization of the GOR's Multi-Sectoral Economic Development Policy

The implementation of the Planned Actions of this sub-plan will be crucial for the development of the key sectors of the economy. The development and deployment of the necessary infrastructure (physical and communication infrastructure) is key to the implementation of a number of the Planned Actions of other sub-plans of the NICI-2010 Plan.

The multi-sectoral developmental impact of the *Infrastructure, Equipment and Content Sub-plan* is both direct and indirect (via other sub-plans). The agriculture sector, the service sector and the industrial sector will all benefit directly from the implementation of the Planned Actions identified in this sub-plan for improving, rehabilitating, upgrading and expanding the nation's communication and physical infrastructure. The possible direct contribution of this sub-plan to the realization of the GOR's multi-sectoral development policy is therefore self-evident.

On the other hand, possible indirect contributions relate to the dependency of the components of some of the other sub-plans on ICT infrastructure development. For example, the deployment of advanced broadband communication backbone technologies is necessary for developing a viable "software-for-export" industry envisaged under



some of the Planned Actions of sub-plans like *Private Sector Development* and *Economic Development*. All Planned Actions identified for implementation under other sub-plans that relate to the use of the Internet also depend, to some extent, on the implementation of the key components of the sub-plan in the area of improving and spreading access to the Internet, as well as improving both the short-haul and long-haul bandwidth link to the Internet.

The multi-sectoral development contributions of these ICT infrastructure development-dependent sub-plans could also be categorized as some of the indirect contributions of the *Infrastructure, Equipment and Content Sub-plan* to the realization of the GOR's multi-sectoral development policy.

#### **Areas of Emphasis as per the ICT-2020 Policy**

The Planned Actions of this sub-plan have implications for both the exploitation and production of ICTs. For example, the deployment and spread of Internet infrastructure throughout the country as envisaged under some of the Planned Actions of this sub-plan is going to have a dramatic impact on the exploitation and utilization of the Internet and its resources in most sectors of the economy. Also, since the use of the Internet requires the deployment of ICT equipment like computers, modems, telephone, servers, etc, it could be argued that the deployment and spread of the Internet infrastructure in the country will have a far reaching impact as per the exploitation of ICTs within the country.

Furthermore, a number of the Planned Actions targeted for implementation under the *Infrastructure, Equipment and Content Sub-plan* have direct relevance to the ICT Production policy orientation of the Government.

For example, a number of the initiatives that will be directed at ICT infrastructural development efforts do lend themselves to contributing to the development of the local ICT industry. In addition, the highly skilled technical personnel normally required for most ICT infrastructure development activities often play a key role in other related ICT system development initiatives. For example, communication and telecommunication engineers play a role in R&D initiatives aimed at developing and fabricating telecommunication and communication products, devices and systems.

The *Infrastructure, Equipment and Content Sub-plan* will therefore contribute to the GOR's policy goal to simultaneously pursue both ICT exploitation and

production policy involving the utilization and exploitation of ICTs to support the delivery of government services and the activities of various sectors of the economy as well as the production, development and delivery of ICT products and services, i.e. towards the development and promotion of an ICT industry and service sector.

#### **Expectations for the Development of Rwanda's Information and Knowledge-based Society and Economy (IKE) Development Goals**

It is anticipated that the implementation of the Planned Actions of the *Infrastructure, Equipment and Content Sub-plan* will contribute to the process of the development of the Rwanda's information society and economy – the ultimate goal of the Rwandan ICT-led development vision. In particular, it is envisaged that the implementation of the initiatives of this sub-plan will lead to the achievement of the following Information and Knowledge Economy (IKE) goals:

- The development of a high-income economy dominated by trading in ICT products and services.
- The development of an economy characterized by a large commercial services sector with a reasonably large and vibrant ICT services sub-sector and industry.
- The development of an economy characterized by a technology-based, knowledge-driven industrial sector.
- The development of an economy characterized by a widespread deployment and exploitation of ICTs within the society to support the delivery of health, education, government and social services.
- The development of an economy in which a reasonably large proportion of the population has access to information and communications technology products and services.
- The development of an economy in which the provision and delivery of goods and services of the economy's key sectors are to a large extent facilitated by information and communications technologies.
- The development of an economy in which the provision and delivery of services by government and its administrative machinery are to a large extent facilitated by information and communications technologies.
- The development of an economy based on an advanced and reliable national information and communications infrastructure.

#### **The Risk Factors**

Possible risk factors associated with the implementation of the *Infrastructure, Equipment and Content Sub-plan* relate only to situations where there is no appreciable return on investment in infrastructure development, especially in the areas of costly advanced ICT infrastructure.

However, the likelihood of this risk manifesting itself is not high since, as expected, the private sector will be the main – if not the sole – investor in this area and it is not likely that they will invest if they are not sure that they will get a good return on investment.

Furthermore, evidence in other countries shows that the telecommunications and communications sector is a very lucrative one because of the advent of the Internet and the strategic role that advances in communication technologies are playing as a key socio-economic development factor in most regions of the world.

Another possible risk factor relates to the possibility of Rwanda failing to attract substantial quality investment in the development of ICT infrastructure after the Government has done all that it can to liberalize the communication sector and provide costly (in terms of "revenue-forgone") tax incentives and packages to attract investors. In the event that this happens, not only will there be the risk of revenue loss (actual cost and opportunity cost) but Rwanda will also run the risk of delaying its technological advancement in the area of communications and telecommunications and this will undoubtedly have an adverse impact on the implementation of other sub-plans of NICI-2010, and on the economy as a whole.

## THE SUB-PLAN FOR ECONOMIC DEVELOPMENT

### Summary of National Strategy and Policy Linkages of the Sub-plan

#### Relevant Vision for Rwanda (VfR) Mission Strategies

- To promote and encourage the deployment and utilization of ICTs within the economy and society
- To transform Rwanda into an IT-literate nation
- To improve Rwanda's human resource development capacity to meet the changing demands of the economy

#### Relevant Government Policy Commitments

##### *Commitment to Pursuing a Multi-sectoral Development Goal*

The GOR fully acknowledges the need for Rwanda to develop a regional competitive advantage in the area of ICT exploitation and production through the development of a competitive ICT industry and service sector. The Government also recognizes the crucial role that a modernized agriculture sector can also play in accelerating the nation's economic development. The GOR is therefore committed to implementing a multi-sectoral socio-economic development policy with the following sectoral goals:

- Agricultural Sector Development Goal: To modernize the agricultural sector to improve its efficiency and productivity to ensure food security, generate rural employment, contribute to economic growth, and to improve the foreign exchange generation capacity of the sector
- Service Sector Development Goal: To develop a competitive, high value-added service sector, to generate employment, and serve as an engine for accelerated development and economic growth with the potential to develop into a business-service hub for the domestic economy, the East African sub-region and beyond. The GOR is fully aware that the Rwandan domestic market is far too small, and in order to grow and accelerate its development process it must export. The goal to develop the service sector as a business hub to produce and export its services into the sub-region and beyond is key to the Government's socio-economic development policy objectives.
- Industrial Sector Development Goal: To develop a viable ICT production and development industry, a vibrant cottage industry, and a mass-consumer products light industry capable of generating economic growth and employment, and producing goods for the domestic market as well as for export into the sub-regions and beyond.

##### *Commitment to R&D Initiatives to Support the Development and Exploitation of ICTs*

In order to enhance Rwanda's capacity to develop, produce, manufacture and assemble ICT products and services as a step towards developing a local globally competitive ICT service sector and industry, the GOR is committed to promoting and supporting R&D initiatives in the Rwandan Research Institutions, universities and colleges.

#### Relevant ICT4D Policy Expectations

- Support the development of a local ICT industry to facilitate the production, manufacturing, development, delivery and distribution of ICT products and services
- Support the development of the national information and communications infrastructure
- Contribute to the development and implementation of e-Commerce in Rwanda
- Facilitate the modernization of the agricultural sector to improve its productivity, competitiveness and its contribution to food security, employment generation and economic development
- Promote widespread deployment and access to information and communication technologies and resources within the community in both the urban and rural areas of the country
- Contribute to the development and implementation of e-Government, e-Commerce and e-Education in Rwanda.

#### Policy Action Items

To implement its ICT4D policy intentions in the area of economic development within the context of facilitating the development of the Rwandan information and knowledge-based economy and society, the Government is committed to implementing specific Planned Actions targeted at achieving the objectives and goals of the following policy action items:

#### Developing the Agriculture Sector

##### *Policy Action Item 1: Intensify and Develop Sustainable Production Systems*

- Halt soil degradation
- Encourage efficient use of resources
- Integrate livestock development
- Develop marshland and irrigation
- Improve and make efficient the supply of agricultural input
- Manage food security and vulnerability
- Encourage the civil society to support and finance sustainable production

##### *Policy Action Item 2: Modernize Farming Systems*

- Promote organizations that group and foster better farmer relationships
- Improve the capacities of farmer organizations
- Reform rural service deliveries
- Promote innovation in rural areas in terms of Planned Actions that are relevant to Rwanda or to local challenges
- Assist farmers to have better access to knowledge of and experience with modern machinery, technologies, agricultural supplies, etc. This could start with raising awareness, then proceed through Web and multimedia presentations, and end with the set-up of farming technology centers where farmers can experiment with new technologies
- Encourage innovation of new products in farming, new techniques of production, and distribution

##### *Policy Action Item 3: Promote Commodity Chains and Development of Agribusiness*

- Promote an enabling business environment
- Promote entrepreneurial skills and attitudes in farmers
- Develop commodity chains
- Develop rural infrastructures

##### *Policy Action Item 4: Encourage Agricultural Institutional Development*

- Reform agricultural institutions
- Ensure proper coordination of agricultural activities
- Establish rural financing schemes
- Establish agricultural credit schemes
- Encourage the formation and growth of agricultural cooperatives

##### *Policy Action Item 5: Stress the Importance of Agricultural Information*

- Organize schemes for establishing agricultural indicators in line with international standards
- Ensure continuous and regular data collection
- Base data collection on GIS maps
- Encourage the use of Global Positioning Systems (GPS) for geographically based data
- Develop suitable analysis to allow for short- and long-term decision-making
- Link data with other national needs such as Early Warning Systems, resource management, etc
- Interface the data with other sectors that feed into or out of the agricultural sector
- Develop automated interlinks between cooperatives and their farmers for increased and more efficient access to information

***Policy Action Item 6: Harness and Protect Natural Resources***

- Automate the collection of information about natural resources
- Disseminate such information to all stakeholders such as farmers, planners, etc
- Develop Early Warning Systems (EWS) that warn against impending shortages
- Develop Early Warning Systems (EWS) that hedge against natural disasters

**Developing the Financial Sector*****Policy Action Item 7: Establish Open, Transparent and Efficient Financial Services***

- Encourage transparency and accountability in financial transactions
- Establish easy and straight forward financial rules and regulations
- Identify all constraints which hinder efficient financial transactions
- Introduce laws and regulations to promote use of electronic signatures
- Promote e-Commerce activities that widen financial operations and make them more efficient and transparent

***Policy Action Item 8: Promote Stable and Suitable Macroeconomic Fundamentals***

- Maintain competitive exchange rates
- Maintain low inflation
- Maintain suitable interest rates
- Maintain fair and equitable fiscal policies

**Developing Industry*****Policy Action Item 9: Address Key Industry Sector Challenges and Opportunities***

- Encourage and promote the use of locally manufactured products
- Encourage the start-up of light industries to improve the state of the private sector
- Encourage and assist industries in the use of ICT to automate and modernize their business and industrial processes
- Set up a scheme that allows Rwanda to collect, analyze and disseminate industrial data at the national level
- Support the industrial sector so that it can generate employment opportunities that serve to reduce poverty

***Policy Action Item 10: Promote Rwanda's Participation in Regional and Global Institutions***

- Participate in all regional and international conferences
- Ensure Rwanda is involved in all regional initiatives
- Encourage the conducting of exhibitions, trade fairs, conferences and workshops in Rwanda
- Make Kigali a professional business and services centre
- Make Rwanda an attractive place to do business with and in
- Promote electronic transactions/e-Commerce to ease business transactions

**Promoting Tourism*****Policy Action Item 11: Make Rwanda an Attractive Tourist Destination***

- Establish a marketing brand/slogan for Rwanda
- Promote a friendly tourist environment
- Promote competitive tourist pricing
- Identify existing tourist products
- Develop new tourist products to attract niche market tourists
- Link up with regional tourist attractions to ensure being part of an attractive tourism chain

***Policy Action Item 12: Use ICT to Enhance Tourist Information***

- Create a Web presence to market Rwanda
- Create a Web presence for all tourism related services such as hotels, car rentals, airlines, etc
- Develop multimedia kits for various tourist sites or products
- Involve Rwanda in major tourist exhibitions and fairs outside Rwanda

***Policy Action Item 13: Empower and Strengthen the Tourism Sector***

- Provide the tourism industry with incentives
- Encourage the development of automation in the tourism industry
- Encourage and insist on integration between the various services in the industry such as hotels, car rentals, tour operators, airlines, etc
- Encourage link up with international chains in order to gain from their traffic

**Promoting the Development of the ICT Industry*****Policy Action Item 14: Focus on Government Leadership in ICT Matters***

- Concentrate ICT strategies in the hands of an empowered entity
- Identify ICT champions and encourage and consolidate their effort
- Raise awareness of ICT as an educational component
- Raise awareness of ICT as a business component
- Endorse an efficient drive towards the modernization of ICT-related laws and regulations
- Improve transparency and predictability of laws related to ICT
- Improve Rwanda's rating in the Technology Achievement Index (TAI)
- Adopt a liberalized approach to Internet e-Governance
- Align ICT practices with international organizations of which Rwanda is a member
- Initiate and endorse national and regional technological cooperation/partnerships
- Promote Rwanda as a base for ICT exhibitions, conferences and workshops
- Promote Rwanda as a base for ICT training
- Promote Rwanda as a base for ICT Planned Actions, development and deployment
- Promote the commercialization, localization and indigenization of ICT
- Encourage out-sourcing and establishment of call centers, incubators and Science and Technology Parks
- Engage in sustained efforts to resolve gender issues in the ICT sector

***Policy Action Item 15: Address Key ICT Challenges and Opportunities***

- Encourage and promote the use of locally suitable software products
- Encourage, liberalize and standardize the use of



#### Geographical Information Systems (GIS)

- Encourage, liberalize and standardize the use of Global Positioning Systems (GPS) and remote sensing
- Monitor and control Intellectual Property Right issues
- Develop and implement standards and guidelines for the privacy and confidentiality of information
- Develop and implement standards and guidelines for security
- Develop incentives for ICT usage in the private sector
- Raise awareness for the need and use of ICT strategic planning in both the public and private sectors
- Encourage public private partnership for national ICT projects

#### *Policy Action Item 16: Improve the Use of ICT in All Sectors*

- Promote and implement good ICT practices in the private sector through raising awareness of standards, software development methods, project management and quality management for ICT resources and operations
- Raise awareness of specific ICT usage in various sectors such as agriculture, tourism, trade, etc
- Use ICTs to provide national and timely business information for healthier business competition
- Encourage the use of consolidated Decision Support Systems (DSS) or Business Intelligence (BI) in the private sector. Different sectors can consolidate their information to provide a better assessment of their situation
- Encourage new ICT-based work modes such as telecommuting, on-line jobs, telemarketing, etc
- Promote the use of ICTs through incentives, exemptions and grants
- Use ICTs to improve business opportunities within and outside Rwanda
- Use ICTs to encourage the establishment of cooperatives for an increased efficiency in promoting rural business and industries in urban areas in Rwanda

#### *Policy Action Item 17: Improve the Status of the ICT Workforce*

- Reform labor laws to apply to ICT jobs
- Enhance ICT job opportunities and encourage job fairs
- Contain the ICT brain drain by motivating the ICT workforce to stay in the country
- Encourage the return and involvement of Diaspora with ICT skills
- Create a body to act as a liaison between the ICT Sector and the educational sector
- Encourage academic institutions to cooperate with the ICT Sector to ensure that the educational programs provided by such institutions meet the requirements of the ICT industry
- Encourage academic institutions to require longer on-the-job training than summer jobs or internships. It would be of benefit for both Academia and the ICT industry to absorb university students during longer periods, such as six months or more
- Provide job career counseling for ICT staff
- Modernize the job classification of ICT staff in the public sector including a restudy of their scheme of service
- Improve the status of ICT units in all government entities (ITSDs)
- Develop equivalence programs to allow those with relevant ICT experience but without minimal educational levels to benefit from positions and contracts targeted at higher educational levels
- Involve the professional ICT associations in the improvement of the status of the ICT workforce
- Establish an ICT Syndicate to harness and improve the quality of the national ICT talent pool
- Standardize and certify ICT skills according to international standards

#### *Policy Action Item 18: Improve the Efficiency of the ICT Sector*

- Initiate and support research and development in the ICT Sector
- Improve ICT practices in both the private and public sectors
- Encourage fair business practices within the sector
- Develop the proper legal framework and regulations for ICT operations, import and export, and employment contracts
- Ensure on-going collection and dissemination of information about the ICT Sector
- Modernize patent and copyright laws
- Improve public sector procurement procedures for ICT products and services

#### *Policy Action Item 19: Assist the ICT Sector in its Objectives*

- Enhance the image of Rwanda as a center of ICT knowledge and expertise
- Reward excellence in ICT innovation and use
- Promote the start-up of Application Service Providers (ASP) as this would encourage export of services to regional countries
- Encourage the export of business/ICT expertise through outsourcing
- Provide tax exemption incentives on ICT expenditure in both ICT and other sectors
- Raise awareness of ICT usage and benefits in the business culture
- Endorse policies that reduce costs (mostly labor) to facilitate export
- Encourage and facilitate ICT exports
- Encourage and facilitate Foreign Direct Investments (FDI) in ICT
- Encourage and facilitate financial support for start-up ICT firms (e-grants)
- Encourage research projects aimed at solving local problems and meeting national standards
- Improve the business capabilities of technological companies
- Sponsor the presence of ICT companies in regional and international technological exhibitions

#### *Policy Action Item 20: Encourage ICT Professionalism and Professional Development*

- Encourage quality-management systems for systems development and operations
- Encourage certification by ISO and other standards such as the Capability Maturity Model
- Encourage the set-up of local chapters of international ICT societies and related practices such as computer societies (ACM, IEEE), the Project Management Institute (PMI), the Information Systems Audit and Control Association (ISACA), etc
- Encourage and support ICT professional associations (e.g. RICTA)
- Promote general professionalism in the ICT Sector and use of ICT in other sectors

#### *Policy Action Item 20: Promote State of the Art Technologies*

- Encourage the start-up of Competency Centers in Rwanda
- Provide channels for the transfer of technology
- Make available and affordable the technological infrastructure and needs of the ICT Sector
- Encourage academic institutions to provide advanced ICT degrees
- Encourage local cooperation with international ICT companies
- Facilitate the establishment and strengthening of ICT technical support centers, call centers and information service centers for the region
- Encourage and launch technological zones, Parks and incubators
- Encourage technology transfer and the use of emerging and specialized technologies

## PLANNED ACTIONS

### ECD-2.01: Management of Natural Resources

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites	<i>Prerequisites:</i> The setting up of a Water and Soil Management Authority <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Lands, Environment, Forestry, Water and Mines
Implementation Agencies	Ministry of Lands, Environment, Forestry, Water and Mines, in collaboration with the Ministry of Agriculture

#### Planned Action Details

*Purpose:*

To acquire and install management systems to monitor soil erosion, water level, quality and evaporation rates so that corrective measures can be taken to ensure that resources are available on a sustainable basis.

*Description:*

The aim of this Planned Action is to generate management information to be analyzed for benchmarking against international standards and to take corrective measures where necessary. Key deliverables will be regular monthly reports.

Laboratory analysis of silt, quality and evaporation rate indicators taken from various water sources will be automatically transmitted to central station at regular intervals.

The implementation level will be at national and regional levels.

*Benefits of the Planned Action:*

- The beneficiaries include the entire society and especially the poor whose vulnerability to degraded water and soil is most severe
- Since their livelihood depends so much on agriculture, the project will alleviate their suffering
- Sectors such as industry and health will benefit as well

*Risks:*

- Lack of funding
- Incompetent staff
- Out-of-date information

*Budgetary Estimate:*

Category C (between US\$500,000 and US\$800,000)

### ECD-2.02: National Agricultural Information System

Type	Development Projects
Relevant NICI-2005 Plan	This Planned Action is an aspect of C5.3 of the NICI-2005 Plan
Roll-over Planned Actions and Initiatives	C5.3: The Rwanda Agricultural Information System (RAGRIS)
Planned Action Prerequisites	<i>Prerequisites:</i> The setting up of a fully fledged body/department to dedicate its services to offering agricultural information <i>Linkages:</i> RCA-2.02 Agro Bus RCA-2.04 Multipurpose Community Telecenters
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Agriculture
Implementation Agencies	Ministry of Agriculture in collaboration with Farmer Groups, Agricultural Suppliers, NGOs and the National Computer Center

#### Planned Action Details

*Purpose:*

To launch activities whose main purpose is the collection, processing and analysis of agricultural data.

*Description:*

Citizens need to have a one-stop-shop access for all information related to agriculture and its activities. This includes production, research and development, partial weather and soil patterns, food quality and safety standards, contact of Business Development Service providers (BDS) and others.

*Benefits of the Planned Action:*

- Provide agricultural information at a national scale; the Government can plan for better development of this important sector
- Assist farmers, agricultural suppliers and other agricultural stakeholders in better planning their operations by providing them easy access to information

*Risks:*

- Improper collection of data
- Improper dissemination of data



**Budgetary Estimate:**

Category C (between US\$500,000 and US\$800,000)

**Schedule:**

Phase 1: Establish the unit in the Ministry responsible for handling the center (around three months).

Phase 2: Develop/acquire the required technologies (around six months).

Phase 3: Data collection and processing (continuous process).

Phase 4: Data dissemination (continuous process).

**Schedule:**

Phase 1: Set up a unit to collect and verify the prices in the various markets. In due course, such markets will be given the facility to update their prices on-line.

Phase 2: Develop the agricultural market websites.

Phase 3: Launch the website while training various community Telecenters and other Information Access Points to use the information.

**ECD-2.03: Agricultural Market Information System**

Type	Development Projects
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of C5.3 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	C5.3: The Rwanda Agricultural Information System (RAGRIS)
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> RCA-2.04 Multipurpose Community Telecenters
Planned Action Due Date	Second quarter of 2008
Planned Action Ownership	Ministry of Agriculture
Implementation Agencies	Ministry of Agriculture in collaboration with the Private Sector Federation; Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives; Farmer Groups and RITA

**Planned Action Details****Purpose:**

This Planned Action is meant to provide farmers with reliable marketing information that helps them reach their markets more effectively, at lower cost and with wider opportunities.

**Description:**

The Planned Action will be operated by setting up the information on a website that is published and made accessible to various Multipurpose Community Telecenters (MCTs) and other Information Access Points. The website will be updated by various units in different commodity markets in the Rwandan urban areas. The purpose of the website will be to publish daily information on the following:

- Raw material pricing
- Agricultural supplies pricing
- Commodity pricing

Access to the Web will be possible for farmers at various points of access.

**Benefits of the Planned Action:**

The farmers will benefit as individuals or as groups. They will get fair returns for their investment because they will not be cheated on the market prices of the commodities.

**Risks:**

- Lack of technology awareness within farmer groups
- Improper collection and updating of information

**Budgetary Estimate:**

Category C (between US\$500,000 and US\$800,000)

**ECD-2.04: Biodiversity Information Exchange**

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Lands, Environment, Forestry, Water and Natural Resources
Implementation Agencies	Ministry of Lands, Environment, Forestry, Water and Natural Resources in collaboration with Fond pour l'Environnement Mondial, Global Environment Facility Project and RITA

**Planned Action Details****Purpose:**

To build a website for biodiversity information exchange and to develop an extensive and frequently updated environmental knowledge base.

**Description:**

This knowledge can evaluate alternative plans for managing biodiversity and ecosystems to optimize the union between the environment and the economy. The focus research on biodiversity and ecosystems information is to promote use of that information in management decisions, in education and research and by the public.

- Development of knowledge products of biodiversity and ecological information and on the standards and tools needed to deliver them
- To be part of the development of an international mechanism to make biodiversity data and information accessible worldwide
- Biodiversity information exchange
- Biodiversity conservation
- To integrate up-to-date knowledge into management, use and conservation of biodiversity and ecosystems
- Search out Rwanda biological species, their characteristics and interrelationships
- Explore fundamental ecological principles to monitor ecosystem status, better predict change and optimize sustainable productivity
- Design new mechanisms to encourage a sustainable relationship between economy and environment
- Apply leading-edge information science and technologies to electronically organize, interlink and deliver biological information for use by all sectors of society
- Educate Rwandans about the ecological and economic importance of biodiversity and ecosystems and the economic impact of choices in management of natural capital
- Fully participate in management and conservation of global biodiversity resources by sharing information and resources
- Expertise and assistance in building a scientific infrastructure in other developing nations
- Quantitative goals or levels to be achieved if available

An infrastructure to support knowledge discover for global biodiversity research also includes:

- Support of sharing, use and coordination of massive datasets
- High-end computation and communications
- New technologies applicable to biodiversity information
- An organized framework for collaboration among international, national and regional organizations, public and private sectors
- Electronic forum on biodiversity
- Global focus for development of an “authority file” – a comprehensive catalog of names of all species currently known to science and constantly updated

*Benefits of the Planned Action:*

- Collaboration among governments, scientific entities, technical/industrial entities, educational entities
- Open access of all sectors of society and all countries to information about biodiversity
- Importance of biodiversity as a critical partner in economic decision making and sustainable development
- Ability to access multiple databases, using new tools for gathering, analyzing and synthesizing data
- Ability to present computational results so that findings in areas of biodiversity/ecosystem are more applicable to management/policy/etc

*Risks:*

- General discussion of challenges, problems and risks
- Lack of investment in new technology tools to electronically organize, interlink and deliver biological information
- Lack of investment and resources in making existing data electronically available

*Budgetary Estimate:*

Category B (between US\$200,000 and US\$500,000)

#### ECD-2.05: Land Use Management and Information System

Type	Development Projects
Relevant NICI-2005 Plan	This Planned Action is an aspect of C5.4 of the NICI-2005 Plan
Roll-over Planned Actions and Initiatives	C5.4: Land Records Information System (LARIS)
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> There is a requirement to develop legal texts and regulations with a view to clarifying and introducing different modes of land tenure.</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Second quarter of 2008
Planned Action Ownership	Ministry of Land, Environment, Forests, Water and Natural Resources
Implementation Agencies	Ministry of Land, Environment, Forests, Water and Natural Resources in collaboration with Ministry of Agriculture, Ministry of Infrastructure, Ministry of Finance and Economic Planning, and private sector

#### Planned Action Details

*Purpose:*

The overall objective of the sector is a three-year plan (2005-2007) to put in place a land tenure system that guarantees security to the population of Rwanda. It will also guide the necessary land reforms with a view to sound management and rational use of national land resources; and provide an agreed set of maps that can be acquired by the public. This will enable the public and the private sector to reduce the effort required to prepare and use such maps.

*Description:*

The overall system will have the following aims:

- Use GIS maps to simplify land management
- To disseminate the land policy and legal texts
- To explore the possibility of finding land for Rwandans who have been dispossessed of their land due to political reasons
- To introduce a reformed cadastral system
- To design efficient planning for the use of the national land heritage
- To establish a National Lands Center
- To establish an institutional framework defining stakeholders and their responsibilities, powers, the policies that guide them, and the laws that govern them
- To train technicians operating in the land sector
- To develop an ICT application that supports the above aims. This will be a combination database-application with GIS baselines

With reference to the Government agenda and national documents, Government policies in the management and protection of natural resources and environment are as follows:

- The main objectives of *Vision 2020* are land-use planning and forestry management; to ensure that the use of national space is organized and used rationally, based on an overall land-use planning and development program which is regularly updated; and to ensure that all the land is classified and used according to its actual purpose
- The poverty-reduction strategy includes management of land resources, and sees the adoption of draft land policies and laws by Cabinet and Parliament; wide dissemination of land policies and land laws to sensitize the population to their rights and duties in this regard; development of a cadastre and an efficient, participatory and locally acceptable system for granting property rights; and establishment of efficient mechanisms for the resolution of land disputes at the local level
- The Government has assigned the Ministry of Lands, Environment, Forestry, Water and Natural Resources the task of developing policies, laws and regulations with regard to land as well as their follow-up and evaluation; promoting private sector investments in natural resource protection activities; developing research for improved knowledge of the wealth of the country's subsoil and appropriate exploitation technologies; coordinating all the activities for better management of natural resources; institutional capacity-building for decentralized entities in natural resource management, both at the central and local level
- As part of decentralization and good governance, decentralized entities will be responsible for the implementation of national land policies and land laws. Land commissions will be formed at provincial, district/town and sector level, and land offices will be established in each district and in each town to deal with land administration and land-management tasks that were previously dealt with by central Government.

Quantitative goals or levels to be achieved, if available:

- Land tenure is guided by the rules of written law known by all
- Land management commissions, both rural and urban, are established at national, provincial, district/town and sector level
- Land is made available to Rwandans dispossessed of their land due to political reasons
- A cadastral system is put in place at national and district/town level
- Rational land development is guaranteed
- A national lands center is established
- Youth and women's organizational structures and peoples' organizations take an active part in land management
- An institutional and legal framework is operational
- Capacities of technicians responsible for land administration and management strengthened

The Planned Action aims at the following:

- To develop legal texts and regulations with a view to clarifying and introducing different modes of land tenure
- To establish commissions at national, provincial, district/town and sector level
- To make an inventory of unoccupied land under private or state ownership

- Restructure the national cadastral system
- To draw plans for land development at national and local level
- To carry out a feasibility study
- To train women and youth organizations in land management
- To identify stakeholders in the field of land management at national level
- To train technicians in the cadastre, planning and land management in specialized schools in the region
- To disseminate to the population modes of access acquisition and management of landed property
- To compile a list of individuals dispossessed of their land, making a distinction between those who depend or not on land for their livelihood
- To put in place land offices with staff at district and town level
- To establish a cadastral system at district level
- To develop standards for land-use
- To install and equip the center with land and geographical information
- To establish a consultation framework involving public and private actors
- To train members of land commissions at all levels
- To train technicians for land offices and members of land commission at all levels
- To make land available to those who live off agriculture and livestock, and plots of land in *imidugudu* and urban centers for those who do not depend on land for their livelihood
- Popularize land development standards at all levels (national, provincial, district)
- To disseminate and popularize land policies and law
- To establish technical schools for topographical surveyors
- To follow up the implementation of the land-parceling exercise
- To develop a law establishing a national land and geographical center
- To establish a higher institute of topographical surveyors
- To create pilot sites for land development
- To develop legal texts that clarify the duties of land commissions and land offices
- To collaborate with international institutions involved in land issues

*Benefits of the Planned Action:*

- The establishment of mechanisms that will guarantee land-tenure security to users without discrimination
- The promotion of rational land-use and conferring land its true value
- The establishment of a legal and institutional framework which will lead to efficient land management and protection, an increase in national production, as well as the promotion of investment
- Legal texts and regulations will be readily available, as well as inventories down to cell level
- Commissions will exist at all levels of society
- Cadastral system is computerized at national level and a manual cadastral system is in place at district level
- Plans for land development readily available
- Training of land technicians at national, provincial, district and village level
- At least one information brochure on the modules of access, acquisition and management of landed property is available down to cell level
- Land offices with staff are in place in each district
- Standards documents available at all levels (national, province, district)
- Center built and equipped by end 2007
- National land commissions operational
- All members of land commissions will be trained
- All listed individuals will be given land
- At least two technical schools for topographical surveyors are established

*Budgetary Estimate:*

Category D (between US\$800,000 and US\$1,000,000)

**ECD-2.06: Mineral Resources Management**

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Second quarter of 2008
Planned Action Ownership	Ministry of Lands, Environment, Forestry, Water and Natural Resources
Implementation Agencies	Ministry of Land, Environment, Forests, Water and Natural Resources in collaboration with Ministry of Local Administration, Community Development and Social Affairs, the Ministry of Agriculture and Animal Resources and the Private Sector Federation

**Planned Action Details**

*Purpose:*

To develop a GIS based application to collect, monitor and research mineral resources data

*Description:*

The overall objective is to contribute to the improvement of national income through good management of mineral resources. Good management of mineral resources must contribute to a deeper knowledge of geology and mineral resources of the country's subsoil. It will also contribute towards sustainable and rational exploitation of mineral substances, deposits and quarrying products without degrading the environment. The Planned Action shall provide data on hydrocarbons and other minerals, and increase of national exports. This Planned Action also helps to provide an agreed set of maps that can be acquired by the public. The purpose of this is to allow the public and the private sector to cut short the effort needed to prepare and use such maps.

*Description:*

The Planned Action will have the following benefits:

- Improve geological knowledge
- Improve mining and investments conditions
- Develop mining and quarrying resources
- Provide an agreed upon set of maps that can be acquired by the general public
- The mining and quarrying sector must have an important share in the national economy
- Research, mining and quarrying activities must be carried out in a strictly environment friendly manner
- Mining and quarrying must observe labor laws and regulations, safety and public health
- Rational management of mines and quarries is a prerequisite for the development of the sector
- The development of mining and quarrying products must contribute to the creation of industries
- The national potential of the mining sector should be known through research activities carried out through state-of-the-art technologies
- Continued monitoring of seismic and volcano logic movements to ensure the safety of the population
- Capacity-building in monitoring, control and inspection of mining and quarrying activities by decentralized services
- Small scale mining must be supported and organized
- Industrial mining operators must be promoted
- A partnership framework between the State and the private sector must be developed and strengthened
- Women and youth must be involved in the management and development of mineral substances

The Planned Action would resolve such issues as:

- Irregular geological and mining researches due to lack of financial and material resources
- Difficulties in rational use of research findings which are scattered in many departments and abroad

- Difficulties in adopting modern mining techniques by small scale mining operators
- Difficulties controlling the fall of prices of mining products on international markets by mining operators
- Poor information on, and poor compliance with, environmental standards
- Shortage of skilled technical personnel at the level of operators
- Old mining equipment and infrastructure for both industrial and small scale mining operators

*Benefits of the Planned Action:*

- Evaluation and augmentation of mineable mineral deposits
- Evaluation of the potential of Rwanda's subsoil
- Prevention of seismic and volcanic disasters
- Allow women and youth the chance to compete with men in the mining and quarrying sector
- Mining and quarrying legislation is favorable to mining and investment in mining
- Mineral and quarrying substances are better known and rationally mined
- Promoters, donors and mining operators are mobilized to get involved in the sector
- Standardization of mining conditions
- Restructuring and strengthening of the Mining Production and Development Board (REDEMI)
- Establishment of processing and foundry units for mineral ores
- Private promoters know the country's mineral materials and invest in the establishment of plants for their transformation

*Risks:*

- Insufficient financial and material resources to carry out development work by mining operators
- Outdated mining code
- Non-compliance with environmental management and industrial safety standards by mining operators
- Insufficient involvement of women in the mining sector
- Poor technical knowledge at the level of small scale mining operations

*Budgetary Estimate:*

Category C (between US\$500,000 and US\$800,000)

their efficient operations. Although this Planned Action specifically addresses needs voiced by farmers, the Credit Management System is applicable to all types of loan applicants and hence has a national benefit.

*Description:*

A system needs to be developed and hosted by the Central Bank of Rwanda. The process will start by direct applications for loans in the farmer's own bank. However, it is extended by the bank processing the loan application with the Central Bank.

The Central Bank will need to define criteria for credit worthiness so that a farmer can immediately be cleared or rejected based on presenting well-defined information to the bank. The Central Bank will also have the responsibility of developing a database application that controls all loans through banks so that parties requesting loans and providing collateral for such loans are centrally assessed for credit worthiness.

*Benefits of the Planned Action:*

- Farmers will benefit from a speedy response to their application
- Banks will benefit by a higher volume of loans
- Banks will also benefit by an improvement in the quality of loans through the reduction of defaulters

*Risks:*

- Developing a loan-application process that is bureaucratic and lengthy
- Developing a loan application process that still requires farmers to spend a lot of time traveling, preparing documentation and visiting different locations

*Budgetary Estimate:*

Category B (Between US\$200,000 and US\$500,000)

*Schedule:*

Phase 1: Reform the credit worthiness regulations and criteria (around three months).

Phase 2: Develop the database application for loan processing and control (around three months).

Phase 3: Promote an awareness of the new loan process (around three months).

#### ECD-2.07: Agricultural Credit Management System

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> The Central Bank needs to define the credit worthiness criteria for debtors</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	The Central Bank
Implementation Agencies	The Central Bank in collaboration with the Ministry of Agriculture and Animal Resources, the Farmer Group and the Banking Sector

*Planned Action Details*

*Purpose:*

Currently, applicants seeking loans from banks or financial institutions have to clear their collateral with all institutions before they can be granted the loan. Farmers find it necessary to finance some of their cash flow needs, which are often minor in value but critical in timing. Speeding up the loan application process is crucial for

#### ECD-2.08: Develop Women-Operated Cottage Industries

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives
Implementation Agencies	Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives in collaboration with the Ministry of Local Administration, Community Development and Social Affairs, the Ministry of Gender and Women in Development, and RITA

*Planned Action Details*

*Purpose:*

This Planned Action aims at providing promotional, technical and financial support to units of women engaged in small scale and cottage industries, and to attract more women entrepreneurs into this sector.

**Description:**

Cottage industry means a small industrial unit either engaged in manufacturing or servicing, generally run by family members either as full-time or part-time, with a very limited total investment.

Women have always had products that they produced in between their traditional chores. Such cottage industries have often been promoted on an individual basis.

The purpose of this Planned Action is to create a cooperative that has its regional centers with the main aim of promoting the work of such women.

Products such as the following can be considered:

- Food items – fresh and conserved
- Clothing items
- Handicraft
- Flower/plant production
- Bottling and canning of natural products
- Special purpose products such as bee keeping, etc

The Planned Action covers such efforts as:

- Carry out gender sensitization workshops for traditional organizations that may interface with the work of such women
- Establish cooperative societies for women in rural areas
- Provide training on related industries
- Organize workshops on income generation for women and youth
- Establish a workplace nursery to cater for children between the ages of one and four years to cover for time spent on such industries
- Establish drop-in centers that can host women who prefer to work outside their own home or for those requiring



special purpose equipment found in such centers

- Assist representatives of such units to participate in exchange programs with other units
- Provide micro-lending facilities to such units to facilitate acquisition of equipment, training and material

The ICT component in this Planned Action will be in the form of promoting the produce of the various units as well as allowing direct purchases on-line. It can also be used to allow women to apply for micro-lending.

**Budgetary Estimate:**

Category C (Between US\$500,000 and US\$800,000)

**ECD-2.09: Encourage Foreign Direct Investments in the ICT Sector**

Type	Consulting Projects
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	This Planned Action is an aspect of Foreign Direct Investment (FDI) in the ICT Sub-plan of NICI-2005
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives
Implementation Agencies	Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives in collaboration with the Rwanda Investment and Export Promotion Agency, the Rwanda ICT Association, and RITA

**Planned Action Details****Purpose:**

To establish an entity that follows up on all issues related to foreign investments in the ICT sector.

**Description:**

One of the problems of the ICT sectors is the lack of proper investment. Companies start small and struggle to grow in a small competitive market. It is therefore difficult for them to grow to the level needed to start contributing to the economy, export their products and be innovative. Foreign Direct Investment (FDI) is to be encouraged.

Secondly, FDI usually brings with it experience and technology-transfer that is much needed in Rwanda.

Foreign investors can be encouraged to invest for the following reasons:

- Use Rwandan companies as cost centers for the development of software
- Use Rwandan manpower for data entry projects
- When the industry is ready, use Rwandan companies for the assembly of hardware

The Government can encourage FDI through the following steps:

- Step 1: Set up a unit that handles the FDI process
- Step 2: Identify ICT companies that can benefit from FDI
- Step 3: Encourage foreign companies to invest in such companies

The challenges are the credibility of Rwandan ICT companies. This should be resolved by immediately encouraging ICT companies to get international level certification in their field of specialization. Software developers need to work through the CMM levels. Hardware companies should be ISO certified.

**Budgetary Estimate:**

Category D (Between US\$800,000 and US\$1,000,000)

**ECD-2.10: National Awards for Excellence in ICT**

Type	Institutional Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites	<i>Prerequisites:</i> None and Linkages
Planned Action Due Date	Fourth quarter of 2010
Planned Action Ownership	RITA
Implementation Agencies	RITA in collaboration with the Rwanda ICT Association

**Planned Action Details**
*Purpose:*

To provide incentives and rewards for Rwandan companies to excel in ICT.

*Description:*

Excellence awards can improve the ICT sector and such awards would be established through RITA. The awards would focus on the achievements of Rwandan firms in the area of information and communication technology. Similar awards for other business areas have become standard status measures in developed countries, such as the Malcolm Baldrige National Quality Award. It has often led to improved performance. Criteria would be established for companies to be included in the yearly contest. A number of criteria should be developed and a committee would evaluate the potential awardees based on such aspects as the following:

- Level of research and development
- Innovation



- Service delivery
- Impact of ICT Planned Actions
- Exportability

This yearly event would be high profile and could possibly carry different categories of excellence.

The project has a dual impact. Firstly, it provides moral and professional support to the innovators. Secondly, the visibility of such an event will promote ICT and Government support of ICT.

On the financial side, the award may help the creator or creators finance an innovation and/or patent and/or market it.

*Budgetary Estimate:*

Category B (Between US\$200,000 and US\$500,000)

**ECD-2.11: The Tourist Network**

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites	<i>Prerequisites:</i> None and Linkages
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Office Rwandaise de Tourisme et des Parcs Nationaux (ORTPN)
Implementation Agencies	Office Rwandaise de Tourisme et des Parcs Nationaux (ORTPN) in collaboration with the Private Sector Federation, the National Civil Society Platform, the Ministry of Foreign Affairs and Cooperation, and RITA

**Planned Action Details**
*Purpose:*

Improve the exposure to tourism in Rwanda by disseminating information and services over the web. More importantly, to link into the diplomatic network and provide all Rwandan diplomatic missions (embassies) with key tourist and tourism related information.

*Description:*

Rwanda has been rebuilding its tourism sector, which is one of the country's strong sectors. It needs to revise its basic tourist practices such as high hotel rates, wider ranging services and information. The on-line tourism information network will support this growth. It would contain significant information for tourists. Information such as the following would be useful:

- Tourist site information
- Prices and booking information
- Leisure information
- Travel and transport information
- Visa requirements (also linked to the diplomatic network)
- Medical/health information (also linked to the health network)
- Festivals
- Cultural activities such as art exhibitions, lectures and concerts
- Weather information
- Link to the Digital Cultural Heritage site or the Virtual Museum (a related Planned Action)
- Statements by visitors to Rwanda

Where possible, the site would contain pages or link to pages that allow transactional services such as:

- Purchase of tickets to all events
- Airline reservations
- Car rental, tour, hotel and other bookings

Consolidating all information into one portal would encourage tourists to seek such information and increase chances of being attracted by one or another service. This site could be managed by the Ministry of Tourism and constantly maintained and updated accordingly.

*Budgetary Estimate:*

Category C (between US\$500,000 and US\$800,000)

**ECD-2.12: Create Incentives for ICT Companies**

Type	Institutional Projects
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of P3.2; P3.4; F2.2; F2.3 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	<p><b>P3.2:</b> Develop and implement specific incentive programs and packages (tax holidays, investment incentives, grants, loans, etc) targeted at encouraging and facilitating local companies to set up STPs within or outside the Export Processing and Free Zones (EPfZs)</p> <p><b>P3.4:</b> Develop and implement specific incentive programs (tax holidays, investment incentives, grants, loans, etc) to attract world-class software houses to set up private STPs either as sole ventures or as joint ventures with local software development companies</p> <p><b>F2.2:</b> Develop and implement specific incentive programs (tax holidays, investment incentives, grants, loans, etc) targeted at encouraging the participation of local businesses and institutions in the EPfZs</p> <p><b>F2.3:</b> Develop and implement specially targeted incentive packages (grants to SMEs) to promote the development of ICT products within the EPfZs for the export market</p>
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2006
Planned Action Ownership	Ministry of Infrastructure
Implementation Agencies	Ministry of Infrastructure in collaboration with RITA, the Private Sector Federation and the Rwanda ICT Association

**Planned Action Details**

*Purpose:*

To provide an incentive to ICT companies to help them with their operations

*Description:*

It is estimated that there are around ten registered ICT training institutes in Rwanda. Only three of these training institutions offer international certification programs. Furthermore, other ICT companies are part of a growing ICT sector.

The following is recommended:

- To provide incentives to such centers in terms of reduced taxation (income, municipality, etc)
- Assist ICT training companies that provide formal certification courses in terms of diverting donor funding

- Encourage the Rwanda ICT Association to look into the status of these ICT training companies and help them in terms of additional trainer training, provision of products and improvement of facilities
- Encourage international ICT companies to support Rwandan training companies in terms of training the trainers, software and training products, simplified certification schemes, etc
- Encourage ICT companies by reducing taxes for software and hardware

*Budgetary Estimate:*

Category A (Less than US\$200,000)

**ECD-2.13: Market and Commodity Exchange**

Type	Institutional Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> ECD-2.03 Agriculture Market Information System
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Agriculture
Implementation Agencies	Ministry of Agriculture in collaboration with Private Sector Federation, the Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives, farmer groups and RITA

**Planned Action Details**

*Purpose:*

Essentially a market exchange, it will most likely be used by the agricultural sector as a means to trade in livestock, agricultural produce and equipment.

*Description:*

The Planned Action provides for a location where all agriculture/livestock products would be traded. Prices can therefore be determined for the whole of Rwanda. This is the stock market of agriculture/livestock products. The products would include coffee, tea, potatoes, soybean, animal products, etc, as well as livestock, agriculture supplies and equipment.

The location can be duplicated in different parts of the country.

*Benefits of the Planned Action:*

- Normalize pricing
- Provide farmers with a one-stop-shop for their requirements

*Budgetary Estimate:*

Category B (between US\$200,000 and US\$500,000)

## ECONOMIC DEVELOPMENT SUB-PLAN: THE IMPLEMENTATION SCHEDULE OF THE PLANNED ACTIONS

Planned Actions	2006				2007				2008				2009				2010			
	Q1	Q2	Q3	Q4																
ECD-2.01																				
ECD-2.02																				
ECD-2.03									■											
ECD-2.04									■											
ECD-2.05									■											
ECD-2.06									■											
ECD-2.07										■										
ECD-2.08										■										
ECD-2.09											■									
ECD-2.10												■								
ECD-2.11												■								
ECD-2.12				■																
ECD-2.13												■								

## MULTI-SECTORAL ECONOMIC DEVELOPMENT AND ICT-2020 POLICY IMPLICATIONS, AND RISK FACTORS OF THE SUB-PLAN

### Possible Contributions to the Realization of the GOR's Multi-Sectoral Economic Development Policy

The implementation of the Planned Actions of this Sub-plan will be crucial for the development of the key sectors of the economy including agriculture, services and the industrial sectors. A number of the Planned Actions are directly targeted at supporting the development and the modernization of the agriculture sector, facilitating the development of the services sector, in particular the ICT services sector, and supporting the development of the industrial sector with emphasis on the ICT industry. The Planned Actions identified for implementation under this Sub-plan have the potential to do the following: contribute towards the realization of the goal to modernize the agricultural sector to improve on its efficiency and productivity; develop a high value-added services sector and develop a viable ICT production industry; and build up a vibrant cottage industry and a mass-consumer products industry that is capable of generating economic growth and employment. Overall, the implementation of the Planned Actions of this Sub-plan will directly and indirectly contribute towards the realization of the GOR's multi-sectoral economic development policy.

### Areas of Emphasis as per the ICT-2020 Policy

The Planned Actions of this Sub-plan have implications for both the exploitation and production of ICTs. For example, the development of the ICT industry and services sector as per a number of the Planned Actions of this Sub-plan is going to have a major impact on the production of ICT goods and services. This will further affect the exploitation and the deployment of ICTs within the economy and society. For example, the production of ICT equipment like computers and the provision of a number of ICT-related services can have a far-reaching impact as per the exploitation of ICTs within the country. With a number of the Planned Actions targeted for implementation under the *Economic Development Sub-plan* and having an ICT production policy orientation, The *Economic Development Sub-plan* will therefore contribute to the GOR's policy goal to simultaneously pursue both ICT exploitation and production policy. This will involve the utilization and exploitation of ICTs to support the delivery of Government services and the activities of various sectors of the economy as well as the production, development and delivery of ICT products and services, i.e. towards the development and promotion of an ICT industry and service sector.

### Expectations for the Development of Rwanda's Information and Knowledge-based Society and Economy (IKE) Development Goals

It is anticipated that the implementation of the Planned Actions of the *Economic Development Sub-plan* will contribute to the process of the development of the Rwanda's information society and economy – the ultimate

goal of the Rwandan ICT-led development vision. In particular, it is envisaged that the implementation of the initiatives of this Sub-plan will lead to the achievement of the following Information and Knowledge Economy (IKE) goals:

- The development of a high-income economy dominated by trade in ICT products and services
- The development of an economy characterized by a large commercial services sector with a reasonably large and vibrant, ICT services sub-sector and industry
- The development of an economy characterized by a technology-based, knowledge-driven industrial sector
- The development of an economy with a globally competitive industrial and services sector, largely driven by cutting-edge R&D activities
- The development of an economy in which the majority of the working population is either directly or indirectly involved in information and communications related activities
- The development of an economy with a modern, efficient and competitive agricultural sector
- The development of an economy in which a reasonable large proportion of the population have access to information and communications technology products and services

### The Risk Factors

A number of the Planned Actions of this Sub-plan are aimed at facilitating the development of the key sectors of the economy, namely agriculture, services and industry. A number of these Planned Actions are in effect focused on the development of the private sector. The expectation is that the private sector will be able to develop fast enough to aid the process of developing a regional competitive advantage in the area of ICT exploitation and production through the development of a competitive ICT industry and service sector. It is envisaged that this process will boast the economy, generate quality jobs, and assist in the process of wealth creation and national prosperity. The risk factor as per the implementation of the Planned Actions of this Sub-plan arises in the situation where the expected boost in the economy did not materialize despite the efforts and resources targeted at facilitating the development of the targeted key sectors. In the event that this happens, then the opportunity cost of the invested resources will be very high. It is also anticipated that apart from boosting the economy, the development of the targeted key sectors as per the Planned Actions of this Sub-plan will also generate additional demand for quality manpower in the medium and long term. This additional manpower requirement of a fast-growing economy is expected to be met by the implementation of the *Human Capacity Development Sub-plan*. There is therefore a risk element (measured in terms of the resources devoted to human resource development) should the targeted key sectors of the economy fail to generate enough economic activity and by so doing fail to create quality jobs.



## THE SUB-PLAN FOR SOCIAL DEVELOPMENT

### Summary of National Strategy and Policy Linkages of the Sub-plan

#### Relevant Vision for Rwanda (VfR) Mission Strategies

- To facilitate the process of national reconciliation and reintegration by promoting social and cultural interaction within the society
- To transform Rwanda into an IT-literate nation
- To promote and encourage the deployment and use of ICTs within the economy and society

#### Relevant Government Policy Commitments

*Commitment to Providing and Ensuring a Favorable Enabling Political and Socio-Economic Environment for Developing Rwanda's Information Society*

The Government recognizes that one of its key roles will be to ensure a favorable enabling political and socio-economic environment for facilitating the process of establishing Rwanda's information society and economy. The GOR is therefore totally committed to providing and facilitating the necessary enabling political, social and economic environment to support the process of developing the social sector to aid the process of facilitating and accelerating the development of Rwanda's information society and economy. The GOR is also committed to taking the necessary policy and programmatic initiatives that will include implementing the necessary policy programs and instruments targeted at facilitating the deployment of the ICTs to support social and community-based initiatives and cultural and national heritage promotion efforts, as well as using ICT to empower various sections of the community, including vulnerable groups.

*Commitment to Improving and Promoting Access to Information*

The Government, as part of its policy, is committed to promoting information in order to facilitate the achievement of social welfare and to foster national reconciliation and unity. As part of this commitment, the Government will be pursuing a policy of diversifying and improving the quality of information, increasing accessibility to ranges of information and content within and outside the country, and creating a supportive environment for the development of the private press.

#### Relevant ICT4D Policy Expectations

- Facilitate the development and promotion of the necessary standards practices and guidelines to support the deployment and exploitation of ICTs within the society and economy
- Facilitate the modernization of the agricultural sector to improve its productivity, competitiveness and contribution to food security, employment generation and economic development
- Promote wide-spread deployment and access to information and communication technologies and resources within the community in both the urban and rural areas of the country
- Contribute to the development and implementation of e-Government, e-Commerce and e-Education in Rwanda.

#### Policy Action Items

To implement its ICT4D policy intentions in the area of social development within the context of facilitating the development of the Rwanda information and knowledge-based economy and society, the Government is committed to implementing specific Planned Actions targeted at achieving the objectives and goals of the following policy action items:

#### Developing the Health Sector

*Policy Action Item 1: Ensure the Availability of Human Resources in the Health Sector*

- Expand basic training and in-service training
- Establish equitable geographical distribution of health professionals
- Strengthen management of human resources in the health sector

*Policy Action Item 2: Ensure the Availability of Quality Drugs, Vaccines and Consumables*

- Strengthen procurement and distribution system to ensure availability of vaccine antigens and essential drugs
- Improve access to and quality of essential pharmaceutical products
- Ensure rational use of pharmaceuticals

*Policy Action Item 3: Expand Geographical Accessibility of Health Services*

- Develop the infrastructures needed for proper health services
- Ensure a functioning laboratory network
- Ensure functioning and regular inspection of health facilities
- Encourage and promote e-Health and telemedicine

*Policy Action Item 4: Improve the Financial Accessibility to Health Services*

- Increase the access to financial resources in the health sector
- Improve equity in the financing and utilization of health services
- Optimize allocation and management of financial resources

*Policy Action Item 5: Improve the Quality of Services in the Control of Disease*

- Access to LLIN (Long-lasting Impregnated Nets)
- Decrease malaria fatality rate for children under five years of age
- Reduce HIV/AIDS
- Reduce transmission, morbidity and mortality associated with tuberculosis
- Monitor and supervise HIV, malaria and tuberculosis programs through the implementation of a Resource Management Portal

*Policy Action Item 6: Improve National Referral Hospitals and Research and Treatment Institutions*

- Increase cases treated at tertiary levels
- Improve capacity in specialist medical areas
- Reinforce research capacity for clinical studies

*Policy Action Item 7: Reinforce Institutional Capacity*

- Reinforce health planning, management and supervision at central and district levels
- Revise and implement ICT development
- Enhance medical research and information sharing through ICTs
- Make health management information systems fully functional in public and private sectors
- Promote the automation of all hospitals and clinics
- Develop and use standards for such health indicators as used internationally. ICT can be a main driver for objectives, as it would allow medical institutions to exchange data with ease
- Encourage and enable the exchange of patient/doctor/resource information between hospitals
- Develop guidance content on medical issues and resources for the citizen
- Encourage the interaction between the key players in the medical sector such as hospitals, clinics, doctors, pharmacies, the National Fund for Social Security, insurance companies, etc
- Encourage the use of modern health information systems in private and public medical institutions

#### Promoting Social Issues

*Policy Action Item 8: Reduce Poverty*

- Launch projects and give priority to developments that create employment
- Increase ICT job opportunities, particularly at the lower levels, by decentralizing back office ICT work such as data entry, support, call centers, etc
- Use ICTs in the drive to increase job opportunities in general by collecting job opportunity information, matching supply with demand, and providing counsel on employment issues
- Develop community projects based on ICT production to reduce urban migration and raise the level of employment

- Provide micro-lending for start-up ICT companies or projects, particularly in the areas outside the main towns
- Use ICTs to promote industries based in the rural regions

*Policy Action Item 9: Reduce Gender Disparity*

- Ensure that all data collection about ICT, jobs, education, etc, includes relevant analysis of gender indicators
- Encourage the training of girls and women on ICT skills
- Encourage girls and women to use ICTs
- Resolve gender-disparity issues in education
- Resolve gender-disparity issues in ICT employment
- Encourage women to start-up their own businesses
- Use ICT to encourage women to manage and run cottage industries
- Develop web content of direct interest to girls and women
- Develop web content that emphasizes and increases awareness of gender disparities and related issues
- ICT is gender neutral. However, it must not be applied in a manner that is gender sensitive due to content development, presentation, employment opportunities and ICT skills

*Policy Action Item 10: Improve the Status of the Disabled*

- Improve the situation of the disabled by promoting a national campaign to give them equal social opportunities



- Improve the situation for the disabled by using ICTs to promote and raise awareness of new technologies and Planned Actions specifically aimed at disabled user groups
- Revise labor laws to provide the disabled with equal employment opportunities
- Use ICT to train the disabled on educational and professional subjects
- Train the disabled in ICT skills and practices which allow them to use their abilities (telephone operators, data entry, etc)
- Train the disabled on different ICT skills to improve their job opportunities
- Use ICT to provide the disabled with relevant counseling, sources of information and sources of equipment and medication
- Promote the development and the use of ICT tools and devices that are usable by the disabled

*Policy Action Item 11: Reduce the Digital Divide*

- Expand and improve network infrastructure – affordability, access and speed
- Improve communications infrastructure – affordability and access
- Improve local and international communications reliability and speed
- Build Multipurpose Community Telecenters (MCTs) in rural areas
- Increase the number of free Information Access Points (IAPs)
- Provide affordable computers to schools and libraries
- Provide easy access digital libraries
- Reduce travel and subsistence costs to reduce marginalization

*Policy Action Item 12: Empower Communities and Citizens*

- Focus on the right to communicate
- Raise awareness and realization of rights
- Foster freedom of expression and information exchange
- Diversify content, ownership and control of information and knowledge
- Encourage information exchange and sharing
- Launch electoral information on-line
- Allow the poor to communicate their needs
- Promote and support virtual communities

*Policy Action Item 13: Focus on National Reconciliation*

- Bring peace in the community and enhance social interaction among the Rwandans
- Investigate the possibility of finding land for Rwandans who have been dispossessed of their land due to political disturbances
- Establish a systematic documentation for writing, preserving and presenting the genocide memory
- Rehabilitate morally, judiciary and materially the genocide survivors
- Educate Rwandan people on mutual understanding, tolerance, solidarity and national unity in recalling the memory
- Build a harmonious and respectful society of fundamental rights and liberties
- Create awareness among the national and international community of the genocide reality

*Policy Action Item 14: Improve the State and Health of Youth*

- Promote youth involvement in community services through access to voluntary and charity activities
- Support and endorse a youth network with the purpose of guiding youth towards healthy activities
- Encourage the focus of education and training systems that are well adapted to the actual and future needs. This also addresses the struggle against illiteracy, which is still a big problem for many young people
- Contribute to the reinforcement of social communication at the youth level
- Reinforce the capacities of identification, and improve opportunities for youth micro-projects
- Sensitize the youth to use rearing of farm animals as an income generating activity
- Contribute to the education and participation of the youth in the protection of environment
- Promote youth health

- Avail to the youth a variety of practical information on adolescent issues such as reproductive health, disabilities, the genocide, drugs, alcoholic addiction, gender issues, etc
- Prevent the dangers of HIV/AIDS and other pandemic diseases
- Prevent access to drugs, and educate youth on the dangers of taking drugs
- Develop specific programs of employments and leisure for the youth
- Encourage artistic and cultural creativity in the youth
- Raise the awareness of youth as to their rights and responsibilities
- Integrate youth in the ICT industry
- Use ICT to allow youth to form their own communities and have their own voice
- Train the youth in the appropriation and utilization of new technologies of information
- Encourage the creation of media content for and by the youth
- Expose children to ICTs from an early age

*Policy Action Item 15: Improve the Status of Sports*

- Promote sports as national activities
- Engage the youth in sports at an early age
- Promote sports and leisure activities through the web
- Promote sports knowledge and information
- Encourage and empower sports federations
- Encourage the automation of sports federations to foster better information about sports activities
- Promote use of ICT tools and devices by the sports sector

*Policy Action Item 16: Advance Rwandan Culture through the Use of ICT*

- Capture the cultural heritage electronically/digitally for its protection, utilization and documentation. This would cover literature, painting, sculpture, music, and other culture artifacts
- Provide wide and free global access to the captured heritage
- Promote the dissemination of Rwandan culture through websites
- Promote Kinyarwanda and other widely used languages as part of the culture

*Policy Action Item 17: Use Information and Knowledge as Part of the Social Fabric*

- Improve regional integration through ICTs
- Provide pervasive access to information
- Raise awareness and monitoring of environmental issues through ICTs
- Raise awareness and reduce vulnerability to natural and man-made disasters through ICTs
- Raise awareness of Early Warning Systems through ICTs
- Disseminate social statistical information
- Encourage social groups to participate in the provision and dissemination of ICT-based services and products
- Encourage voluntary and charity activities through ICTs
- Encourage the proliferation of Rwandan websites and presence. Provide consolidated access to such presence

*Policy Action Item 18: Environmental Management/Social Impact Monitoring*

- Set up and monitor environmental information
- Disseminate such information
- Promote awareness of environment information and issues
- Encourage environmental protection
- Support environmental impact assessment activities of the Ministry of Environment
- Include environmental education as part of school syllabi
- Encourage the youth to be involved in environmentally beneficial activities
- Ensure a state-of-the-art disposal of ICT equipment and supplies
- Promote the use of ICTs as a means for environmental preservation

## PLANNED ACTIONS

### SOC-2.01: Drug Procurement and Tracking System

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> On-line access between the different actors (Ministry of Health, central purchasing agencies, district pharmacies and health centers) <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Health
Implementation Agencies	Ministry of Health in collaboration with Central Purchasing Agencies, pharmacies, hospitals and health centers

*Purpose:*

- Put in place an efficient procurement and distribution system to ensure the availability of vaccine antigens, and essential drugs and consumables at the level of the district pharmacies and health centers
- Develop and publish a drug pricing policy, including subsidies for some essential drugs and consumables in order to improve access for the poor and ensure price transparency
- Strengthen the quality assurance and registration system of drugs in both the public and private sector

*Description:*

The provision and distribution of drugs, vaccines and consumables constitutes one of the essential support systems for delivering health services. The availability of drugs and consumables is one of the key dimensions in accessing health services for the population. At the level of the district pharmacy and health centers, stock shortages of essential drugs are common. The poor availability and accessibility to pharmaceutical products is caused by:

- A weak procurement system and an absence of standardized procurement procedures
- A lack of clear drug pricing policy
- A low number of district pharmacies maintaining drugs stock rationally

The facilities provided by the Drug Procurement and Tracking System are:

- Distributed and integrated system that inter-connects the Ministry of Health, district pharmacies, health centers and central purchasing agencies
- Drug registration system
- On-line drug pricing matrix
- On-line drug information system
- On-line procurement system
- Advanced inventory management system at district pharmacies and health centers
- Up-to-date stock situation
- Automatic notification/reorder for minimum quantities/out of stock items
- Drug expiry-date management
- Stock visibility between pharmacies/health centers for emergency drug delivery
- Statistical use of drug reports

*Benefits of the Planned Action:*

- Reduce the number of out-of-stock days for essential drugs in pharmacies and health centers
- Increase the proportion of health facilities that have all vaccines available
- Improve access for the poor and ensure price transparency

**Budgetary Estimate:**

Category C (between US\$500,000 and US\$800,000)

**Schedule:**

- Phase 1: Analysis and design of Drug Procurement and Tracking System (around three months).
- Phase 2: Develop the distributed and integrated system (six months).
- Phase 3: Operate at Ministry of Health and central purchasing agencies (three months).
- Phase 4: Prototype Planned Action at decentralized pharmacies and health centers (three months).

**SOC-2.02: The Citizen's Guide to Health Information and Services**

Type	Development Project
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of G8.3</b>
Roll-over Planned Actions and Initiatives	G8.3: The Public Information Kiosks (PIKs) Initiative
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> SOC-2.03 Resource Management Portal for Major Diseases
Planned Action Due Date	2007-2008
Planned Action Ownership	Ministry of Health
Implementation Agencies	Ministry of Health in collaboration with the Human Resources Development Agency (HIDA), the National Civil Society Platform, hospitals and health centers

**Planned Action Details****Purpose:**

This network would improve the access of the citizen to information about health issues and health services providers.

**Description:**

Access to information about health issues and health services providers is limited. This is particularly true in rural areas and for the poorer population. Access points can provide this type of information. Once spread across the country, the information would be of extreme benefit to a large proportion of the population. The access points can be located in municipalities, Community Telecenters, health centers and clinics, Ministry of Public Health offices, libraries, schools and others. Of major benefit would be the presence of a guide who can assist users in navigating through the information. The system would be established to work on a touch screen system to facilitate the use for computer illiterates. Information about health services could cover health centers, hospitals, clinics, doctors, pharmacies and laboratories.

Special programs launched by the Ministry of Public Health such as those on diabetes, osteoporosis, etc, to include on-line medical services such as physiotherapy, chiropractics, etc, Red Cross centers, medical equipment for hospitals, doctors and patients, emergency services, drug rehabilitation centers and on-line medical services.

The information can be presented in a regional classification. Terms and conditions can also be written to provide additional assistance. The system would collect information about user trends, access point usage, information type request, etc, in order to provide users with the best service and information focus. Included in this portal would be a variety of general medical information that would provide the citizen with information on:

- Various common diseases
- Symptoms to watch out for
- General health good practices
- General medical information and education

- Drug information and awareness
- Good practices for the use of pharmaceutical products

The challenge of this Planned Action is to keep it up-to-date as well as to promote its use.

**Budgetary Estimate:**

Category A (Less than US\$200,000)

**Schedule:**

- Phase 1: Analyze and define the required information (around three months).
- Phase 2: Develop the website and related applications (six months).
- Phase 3: Raise awareness and promote the website (two months).

**SOC-2.03: Resource Management Portal for Major Diseases**

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> The Resource Integrated Health Information Management System must be operational <i>Linkages:</i> HRD-2.03: Health Human Resources Management/Planning Information System SOC-2.01: Drug Procurement and Tracking System SOC-2.04: Integrated Health Information Management System
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Health
Implementation Agencies	Ministry of Health in collaboration with hospitals, health centers and RITA

**Planned Action Details****Purpose:**

The HIV, Malaria and Tuberculosis Resource Management Portal in Rwanda is a tool designed to strengthen the Ministry of Health's capacity to monitor and supervise these diseases.

**Description:**

The development of a fully functional resource management portal is an essential monitoring tool to control and evaluate HIV, malaria and tuberculosis diseases in Rwanda. It can cope with other diseases should these become crucial. The main features of the Resource Management Portal (RMP) are:

- It is fully integrated with the Ministry of Health Management Information System.
- It can automatically consolidate data from the Ministry of Health and health centers systems, and from other systems (TRACNET).
- It can automatically consolidate data from the Drug Procurement and Tracking System (DPTS).
- It has up-to-date figures and statistics.
- It provides instant evaluation of care/diseases in remote locations.
- It provides a multiple-criteria search capability.
- It caters for automatic publishing of key reports.

**Benefits of the Planned Action:**

Monitoring and supervising diseases through the portal will allow the Ministry of Health to:

- Decrease malaria fatality rate for children
- Reduce HIV/AIDS
- Reduce the transmission, morbidity and mortality associated with TB

*Budgetary Estimate:*

Category B (between US\$200,000 and US\$500,000)

*Schedule:*

Phase 1: Design the Resource Management Portal (around four months).

Phase 2: Enter the data (manually) while waiting for the full implementation of the Integrated Health Management Information System (start with phase 1).

Phase 2: Prepare the interface with Ministry of Health management Information System (two months).

Phase 3: Publish interactive information.

Each of the actors will have the general management components generally installed at health organizations and comprise the following:

- National Health Care Management Information System
- Human Resources Management Information System
- Financial Management Information System
- Facilities Management Information System
- Equipment Management Information System
- Transport Management Information System
- Various Care services management
- Pharmaceutical and Other Consumables Management Information System
- Service Coverage

**Ministry of Health**

On top of the basic components, specific components of the Integrated Health Information Management System will be implemented at the Ministry of Health:

- Electronic Patient Medical Record system
- Interface with the Health Human Resources Management/Planning Information System
- Interface with the Drug Procurement and Tracking System
- Surveillance Information System
- Socio-demographic Surveillance
- Environmental Surveillance
- Disease Surveillance
- Nutrition Surveillance
- Health Systems Surveillance
- Automatic update of the Resource Management Portal for Major Diseases

**Hospitals/Health Centers**

- In-Patient Management Information System modules
- Master Patient Index
- Admission, Discharge, Transfer
- On-line medical record/chart tracking
- Nursing/Dietary
- Medical staff
- Surgery and resource scheduling
- Out-Patient Management Information System modules
- Clinic Management System
- Outpatient appointment
- On-line medical record
- Physician's Clinic Schedule
- Billing
- Laboratory Systems
- Chemistry Laboratory
- Pharmacy
- Radiology
- Blood testing
- Administrative Systems
- Inventory Management
- Blood Bank
- Billing
- Equipment Maintenance
- Financial Systems
- Interface with the Telemedicine and e-Diagnosis Information System

**SOC-2.04: Integrated Health Information Management System**

Type	Development Projects
Relevant NICI-2005 Plan	This Planned Action is an aspect of C4.7 of NICI 2005 Plan
Roll-over Planned Actions and Initiatives	C4.7: The National Health Information System (NAHIS)
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> On-line access between the different actors (Ministry of Health, central purchasing agencies and health centers)</p> <p><i>Linkages:</i></p> <ul style="list-style-type: none"> <li>Health Human Resources Management/Planning Information System</li> <li>Drug Procurement and Tracking System</li> <li>Resource Management Portal for Major Diseases</li> </ul>
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Health
Implementation Agencies	Ministry of Health in collaboration with Ministry of Public Service, Skills Development, Vocational Training and Labor, pharmacies, hospitals and health centers

**Planned Action Details**

*Purpose:*

Integrated Health Information Management System (HIMS)

- Put in place efficient systems at all layers of the health infrastructure in a phased approach
- Ensure inter-operability between all the layers (Ministry of Health, health centers, labs, pharmacies, etc)
- Automate day-to-day activities

*Description:*

The Integrated Health Information Management System (HIMS) is an overall parent system that comprises various components. Individually and collectively, these components will provide the variety of information needed to support health care delivery in Rwanda.

The different components of HIMS are distributed to the following key actors:

- Ministry of Health
- District health centers
- Referral hospitals
- District hospitals
- Remote health centers
- Donors

- Integrate to different existing systems databases
- On-line access to the Resource Management Portal for Major Diseases

*Benefits of the Planned Action:*

- Increase quality of service in the health sector
- Implementation of the “Electronic Patient Medical Record System” will enhance and accelerate patient care independent of the location
- Prompt and accurate health care diseases figures
- Reduce cost of operations

*Current and Ongoing Work:*

*Budgetary Estimate:*

Category H (between US\$9 million and US\$15 million)

*Schedule:*

Phase 1: Analysis and design of the Integrated Health Information Management System.

Phase 2: Implement the Electronic Patient Medical Record System.

Phase 3: Implement the Ministry of Health Information System.

Phase 4: Implement the Components relative to the referral hospitals.

Phase 5: Implement the Components relative to the district hospitals.

Phase 6: Implement the Components relative to the remote health centers.

- Teach farmers techniques for the sustainable use of water, soil, the environment, etc

For maximum reach, this Planned Action proposes that radio and television programs will be aired at days and times that are suitable to farmers. This Planned Action will be implemented at national, regional and community level.

*Legal, institution or other requirements and Prerequisites:*

- Increase the reach of television
- Set up an Agricultural and Extension Services Committee responsible for the production and vetting of content to be used in the project

*Benefits of the Planned Action:*

- The entire society will benefit due to responsible and sustainable utilization of natural resources for the benefit of current and future generations
- The positive impact on other sectors such as ecological systems, fishing industry, farmers, film industry, intellectual property, indigenous knowledge, etc

*Risks:*

- Inadequate funding
- Irrelevant content
- Inadequate reach
- Improper programming (time and date)
- Poor presentation
- Poor evaluation methods

### SOC-2.05: Develop Content Material for Media Broadcast

Type	Consulting Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> Increase the reach of television; set up an Agricultural and Extension Services Committee responsible for the production and vetting of content to be used in the project <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Office Rwandais d'Information
Implementation Agencies	Office Rwandais d'Information in collaboration with Ministry of Agriculture, Ministry of Local Administration, Community Development and Social Affairs, community-based organization content providers and the NGO Sector

#### Planned Action Details

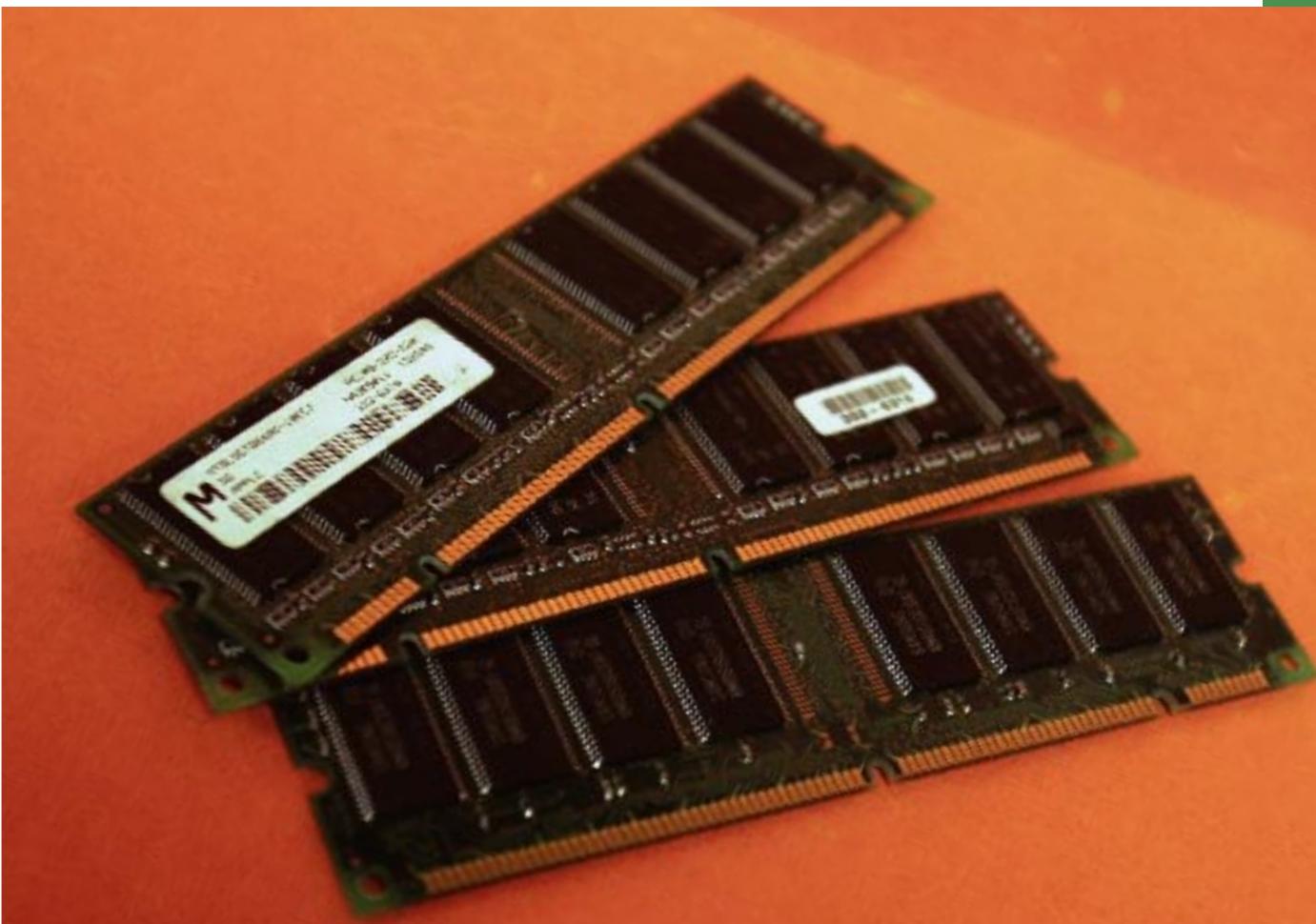
*Purpose:*

To develop and publish content to empower farmers with knowledge so that they can take part in sustainable agriculture using media broadcast.

*Description:*

As most farmers do not have access to ICT facilities, and since most of them do have access to radio broadcasts, the radio becomes a good medium for promotion, raising awareness and capacity-building. Television is accessible but not to the same extent as radio. This Planned Action aims at developing content that helps farmers in their various needs. Radio and TV broadcasts can be used to:

- Expose and train farmers to new technologies, tools and new products
- Provide farmers with informal education that supplements their agricultural knowledge



**Budgetary Estimate:**

Category C (between US\$500,000 and US\$800,000)

**Schedule:**

Phase 1: Establish the Agricultural and Extension Services Committee (around three months).

Phase 2: Define a range of relevant and beneficial material to develop (around two months).

Phase 3: Develop the material (around one year).

Phase 4: Start airing at the time of completion of initial content.

- Notifications by e-mail can be sent to companies or to recruits whenever their search criteria are met
- The website will also publish the results of various studies conducted by the National Employment Office

Neither companies nor recruits will be charged. However, one way to raise funds for this site may be to allow companies additional advertising banners, photos and briefs at a nominal charge.

**Benefits of the Planned Action:**

- Reduction of unemployment
- Matching of educational syllabi with the job market

**Risks:**

One of the risks this Planned Action faces is the possible competition from recruitment offices. Their role is not to be ignored. Recruitment offices have the advantage of direct counseling and interviewing. This site would be to their advantage as they can collect their recruits from it. However, the charges such companies place on recruits or on the recruiting companies will not be related to the Planned Action.

One of the difficulties of this Planned Action will be the classification of jobs in a standardized manner to allow for proper matching. This situation is exacerbated by the need for a three-language usage of the site as neither recruits nor companies are supposed to post their data in three languages.

**Budgetary Estimate:**

Category C (between US\$500,000 and US\$800,000)

**Schedule:**

Phase 1: Set up the National Employment Office (around three months).

Phase 2: Develop the website (around three months).

Phase 3: Constant updating of the website, surveys and studies.

**SOC-2.06: National Employment Processing and the Job Opportunities Portal**

Type	Institutional Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Public Service, Skills Development, Vocational Training and Labor
Implementation Agencies	Ministry of Public Service, Skills Development, Vocational Training and Labor in collaboration with the Private Sector Federation, the National Civil Society Platform and RITA

**Planned Action Details****Purpose:**

To facilitate the matching of supply and demand for jobs in Rwanda.

**Description:**

The job market today suffers from various problems. Rwanda still relies on word of mouth. The purpose of this Planned Action is to make it simple for both employees and employers to match their requirements. A dual approach to resolving this requirement is needed.

**Approach 1: Set up a body such as a National Employment Office that would have the following functions:**

- Survey the job market on an ongoing basis
- Identify requirements within the market and their trends
- Coordinate with Academia to ensure that the right educational profiles are being addressed
- Coordinate the effort of job matching (see below)

Both survey results and market requirements can be published on the website to be set up as per the following function.

**Approach 2: Set up a website to be developed with the following functionalities:**

- Companies or public sector agencies can officially announce their vacancies. The vacancies will be set up on a database designed to allow flexible searching techniques
- Recruits can post their curricula vitae using special entry screens
- Recruits can review company requirements
- Recruits can search the site for matching employers
- Companies can search the site for matching recruits

**SOC-2.07: The Youth Network**

Type	Development Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> Multipurpose Community Telecenters
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Youth and Sports
Implementation Agencies	Ministry of Youth and Sports in collaboration with the National Olympics Committee and RITA

**Planned Action Details****Purpose:**

To provide youth with access to a variety of services, information and activities that would render their lives more meaningful while educating them and preparing them for their role in a modernized the Rwandan society.

**Description:**

More and more, the youth of today are finding it easy and cheap to sit back and be entertained rather than be active and outward going. The purpose of this Planned Action is to promote communities of youth that have outward looking activities and involve them in healthy objectives. The Internet can then be used as a means of communication and source of ideas for activities rather than for its less social use as a source of effortless entertainment.

The purpose of this Planned Action is to establish an entity that can be based on an NGO or a group sponsored by the private sector and strongly supported by the Government. This entity would develop a web portal that is not the main focus of the Planned Action, but is rather the source of communication for youth activities.

The portal would cover such functions as:

- Discussions on the needs of youth and how they can voice their needs
- Youth education covering issues related to formal education as well as general and information education
- Promotion of youth hobbies such as chess, stamp collecting, hiking, trekking, camping, sports (see the Sports Network Planned Action), etc
- Teenage development patterns – physical, sexual, intellectual, social, emotional and moral development
- Pages on youth activities – where to find fun and learning how to get involved
- Advisory channels – youth often face problems that are difficult to expose to family members or friends. They find it easy to resort to objective outsiders. This page would counsel youth on various issues, bringing problems out into the open, defining problems, clarifying their causes, proposing Planned Actions and offering advice
- Advice and information for parents
- Listing of all events of interest to the youth
- Links to such cultural activities of interest to the youth such as music, theater, dance, film festivals and art exhibitions
- Establish a forum for discussions on various issues of direct interest to youth
- Establish chat rooms for youth groups
- Enhance the civic sense of youth by proposing activities for such issues as the environment, democracy, civic behavior, child labor, etc
- Learning to drive and promoting awareness of proper traffic rules and behavior
- Prepare youth for their later years by offering information on educational steps (see the Educational Career Counseling Planned Action)
- Prepare youth for the national military service
- Health issues – prepare the youth to understand their health and its importance, identify key symptoms, and discuss such sensitive issues as safe sex, psychological problems and drugs
- Social issues – prepare the youth to understand such issues as democracy, transparency, political correctness, etc
- Voluntary services – encourage youth to get involved in voluntary or social services. This can be built in as a requirement in school syllabi
- Develop pages that relate to sports activities within and outside Rwanda. Links can be made to major sports websites. This will encourage youth to visit the portal
- Develop pages that specialize in youth that link to media – press supplements, radio and TV programs
- Links to pages that address disability issues – counseling, information, products, communities, laws and regulations

#### *Benefits of the Planned Action:*

The benefits directed at the youth can improve the following:

- Social and communal awareness
- Education – formal and informal
- Democratic concerns and involvement
- Human capacity

#### *Risks:*

- The main challenge of this Planned Action is the establishment of an entity or a body that sustains the results of the Planned Action
- Another challenge would be to secure funding. Public-private partnership can be secured by having vendors with youth products support the site. Banks and other private sector organizations can also contribute, as the future of the youth is in their interests

#### *Budgetary Estimate:*

Category C (between US\$500,000 and US\$800,000)

#### *Schedule:*

- Phase 1: Establish a unit within the Ministry that is dedicated to the start-up and handling of the youth network (around three months).
- Phase 2: Develop the network by defining the information and links needed (around six months).
- Phase 3: Ongoing updating of the website.
- Phase 4: In parallel with Phase 3, promotion of the site to ensure maximum access.

#### **SOC-2.08: Vaccine Notification System**

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> Implementation of the Electronic Patient Medical Record System <i>Linkages:</i> Integrated Health Information Management System (the Electronic Patient Medical Record System)
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Health
Implementation Agencies	Ministry of Health in collaboration with Health Centers, hospitals, Multipurpose Community Telecenters, Telecom operators and the National Civil Society Platform

#### *Planned Action Details*

##### *Purpose:*

By using new technologies such as SMS on mobile phones, a vaccine-notification system can warn family members of their next vaccine date. This tool, mainly aimed for young people, can be easily implemented when the Electronic Patient Medical Record System within the Integrated Health Information Management System is adopted.

##### *Description:*

Having the Electronic Patient Medical Record System in place, and having all health centers reporting to the Ministry of Health, a tool that notifies people of their next vaccine date can help ensure and reduce fatal diseases.

The proposed system will:

- Allow health centers to schedule a notification for a next vaccine visit
- Using information in the Electronic Patient Medical Record, people are notified through their mobile phones or by specialized people through community centers and volunteers

#### *Benefits of the Planned Action:*

Decrease fatality rate of children due to missed vaccines.

#### *Ownership:*

National Civil Society Platform

#### *Budgetary Estimate:*

Category C (between US\$500,000 and US\$800,000)

### SOC-2.10: Volunteering Services and Charities Network

Type	Consulting Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	National Civil Society Platform
Implementation Agencies	National Civil Society Platform in collaboration with the Ministry of Local Administration, Community Development and Social Affairs, the Ministry of Gender and Women in Development and RITA

#### Planned Action Details

*Purpose:*

To promote and facilitate volunteering and charity services and expand the services provided by such organizations in Rwanda, and to encourage active citizenship whereby citizens feel they have both the opportunity and responsibility to improve their society through volunteering and charities.

*Description:*

An Association for Volunteer Services can be established to promote, facilitate and improve volunteering and community service throughout Rwanda. This would help to address community needs as well as encourage citizens to make a positive difference in their society. The Association would be a non-profit organization and would be active in organizing volunteer opportunity fairs for volunteer service organizations, producing an annual volunteer directory, carrying out youth service days and many other related activities.

Furthermore, fund collecting is a major requirement that feeds their charitable effort. One of their key problems is promoting their image and getting to the right donors.

There is a need to establish a network of charities available to the citizen or the private sector so they can decide on the best target for their contributions.

A network of volunteer and charity services would be made available to the citizen so that he or she can either contribute to these services or seek them. This can be achieved by supporting such a society. The society can create a website that would promote its activities, collect information for it and seek recruits and beneficiaries.

The scope can be to:

- Provide a detailed list of all voluntary organizations that actively seek new volunteers
- Provide a constantly updated listing of volunteer opportunities available in these organizations for both individuals and groups (school classes, scout groups, etc)
- Provide the citizen with the means of responding on-line to such opportunities to serve as volunteers
- Provide the means to register individuals or organizations that are interested in being volunteers
- Provide an on-line channel for schools and youth groups to register, develop and report their youth volunteer projects as part of the society's efforts to promote youth volunteering
- Provide a listing of research and semi-professional needs of non-profit organizations that can serve as research and internship opportunities for university students
- Link with international volunteer agencies
- Develop pages charting out each activity undertaken by the society
- Link to sites that have material on volunteerism
- Provide on-line content of interest to volunteers
- Provide a detailed list of all charities

- Provide the citizen with the means of responding on-line to such opportunities
- Provide the means to register new charities on-line
- Provide an on-line channel for schools and youth groups to support charities in their work by providing community service
- Link with international charities

The above activities would also encourage the collaboration of government, NGOs, the private sector and the media, to promote and facilitate active citizen participation through volunteering.

It is important to note that, in order to achieve such objectives, the following is needed:

- Development of facilities throughout Rwanda that help organizations, educational institutions, and individuals to access and interact with this website (both to list volunteer opportunities and to find them). These may be in Ministry of Social Affairs centers, public libraries, educational institutions and/or other public venues
- Development of the basic computer literacy of these organizations, educational institutions, and individuals so that they can participate in this project
- Training of existing staff and expansion of staff in these locations (both paid staff and volunteers) to monitor these access points, and in some cases to be the liaison between the website and computer-illiterate individuals who would like to participate in these website services
- Development of training materials, ideally on-line interactive training for the participating organizations, educational institutions and individuals, to learn how to participate in these website services most effectively
- Personal contact and public awareness campaigns to encourage participation by organizations, educational institutions and individuals

The main challenge is to secure the funding to make all of this possible.

*Budgetary Estimate:*

Category B (between US\$200,000 and US\$500,000)

### SOC-2.10: The Citizen's Guide to Skilled and Craft Services on the Web

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	National Civil Society Platform
Implementation Agencies	National Civil Society Platform in collaboration with the Ministry of Local Administration, Community Development and Social Affairs, the Ministry of Public Service, Skills Development, Vocational Training and Labor and RITA

#### Planned Action Details

*Purpose:*

To provide information on services and skills and provide businesses with new ways of promoting their services.

*Description:*

Rwanda has a large workforce consisting of carpenters, plumbers, electricians, air-conditioning technicians, etc. This workforce operates in an informal manner and does not have any scheme for promoting its services except by personal contacts and word of mouth. The result is an ad hoc business environment that is detrimental for both suppliers and customers.

This project aims to develop an on-line guide for these services. Such a guide can also be disseminated in print form grouped by area or by skill. Following standard yellow page practice, the inclusion of an entry would be provided at no cost. However, parties wishing to have a more prominent exposure can opt to pay for such a service.

Access would be via a suitable classification of skills, geographical areas, etc. This would provide the citizen with an efficient and effective access to relevant data.

The challenge to this service is that Rwanda still relies on personal contacts. Citizens do not acquire services from parties they do not know. However, Rwanda is known for quickly following suit when a scheme is found to be of benefit. It is expected that the success of a pilot project in a small area that is promoted by the media and encouraged by the Government would lead to a nationwide acceptance of the system.

#### *Budgetary Estimate:*

Category A (Less than US\$200,000)

<b>SOC-2.11: Sports and Recreational Network</b>	
Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Youth and Sports
Implementation Agencies	Ministry of Youth and Sports in collaboration with the Sports Federations and the National Olympics Committee and RITA

#### **Planned Action Details**

##### *Purpose:*

To promote sports and recreation in Rwanda.

##### *Description:*

Sports have always been a strong component of life in Rwanda. However, due to the various polemics within and between the various federations, sports have lagged behind as a national culture. There is a directorate for youth and sports and it is carrying out interesting initiatives. However, there is a need to consolidate all these efforts into one portal.

Sports have always been the means to promote a healthy youth. Sports initiatives have the objective of directing the youth towards beneficial activities and away from damaging activities.

The Planned Action proposes the creation of an entity that is responsible for coordinating all information related to sports and publishing them under one portal. This entity will work closely with the Ministry of Youth and Sports as well as all the sports federations in Rwanda.

This portal will contain up-to-date information on the following:

- Each federation will have its own page promoting its activities, events and membership
- Pages about sports events in Rwanda. This can even contain streaming video or audio commentary during the event or as an archive, after the event
- Information about different sports teams in Rwanda
- Pages advising the youth on sports careers. Various schemes and programs can be presented to help budding

national sportsmen and women to develop a sports career or even a strong interest in a sport. They can also be guided into becoming coaches and officials

- Sports facilities for the disabled
- Establish pages for trainers
- Sports equipment such as skis, rackets, balls, etc
- Educational sports pages – history, current situation, rules and regulations, key figures, equipment, etc
- Listing of available indoor and outdoor sports facilities, such as clubs, gyms, beaches, courts and other locations where sports can be practiced
- Listing of available sports coaches
- Linkage to other sports pages to encourage sports tourism in Rwanda
- Links will be made to sports activities in schools and universities
- Links with Academia for sports education
- Links will also be made to major world sports events to save the visitors time searching for them on the web
- Information about sports books and libraries that have sports material
- Booking of sports facilities on-line
- A special page will be created for the Directorate of Youth and Sports to promote its own mission, activities and events
- Establish a forum for discussions on various sports issues
- Establish chat rooms for sports groups

The site should also promote minority sports in Rwanda with the hope that their federations would prosper and grow. Public-private partnership can be secured by having key sports material vendors support the site. Federations can also contribute according to their means.

#### *Budgetary Estimate:*

Category B (between US\$200,000 and US\$500,000)

#### **SOC-2.12: The Citizen's Guide to Labor Relations**

Type	Development Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Public Service, Skills Development, Vocational Training and Labor
Implementation Agencies	Ministry of Public Service, Skills Development, Vocational Training and Labor in collaboration with the National Civil Society Platform and RITA

#### **Planned Action Details**

##### *Purpose:*

To provide the employees and employers with wide ranging information relating to employee/employer relations.

##### *Description:*

There is a need for a wider knowledge base, which would make the relationship between an employee and his or her employer more transparent and clear. The Ministry of Public Service will require that all companies with more than 15 employees have a Staff Regulations manual. It is also proposed that a website be developed that contains such information. The information would be generic and would be restricted to existing labor laws because com-

panies have the right to provide additional benefits or regulations that do not conflict with those of the Ministry of Public Service. Such information as the following can be published:

- Indemnities
- Benefits
- Leave regulations
- Bonuses
- New decrees such as the recent one related to daily transportation
- Grievances and complaints and how to report them to the Ministry with the possibility of setting up a page for posting such grievances
- Disciplinary actions
- Rules of conduct

Moreover, additional information not related to the Ministry of Public Service will be published, for example, relating to the chapters and contributions of the Social Security system, as well as employee benefits provided by such a fund.

#### *Budgetary Estimate:*

Category A (Less than US\$200,000)

#### SOC-2.13: Disability Legal Framework

Type/Sector and Scope	Institutional Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Local Administration, Community Development and Social Affairs
Implementation Agencies	Ministry of Public Service, Skills Development, Vocational Training and Labor in collaboration with the Ministry of Justice, the Ministry of Public Service, Skills Development, Vocational Training and Labor, and the Federation of Associations and Centers of People with Disabilities of Rwanda

#### Planned Action Details

##### *Purpose:*

To develop the necessary laws and regulations needed to improve the employment of the disabled as well as their day-to-day environment.

##### *Description:*

This Planned Action is part of three projects that aim at improving the situation of the disabled by providing them with information and counseling, creating opportunities for their employment through the use of ICT as well as through improving their ICT competence. Disability is a condition caused by an accident, trauma, genetics, age, civil disturbances or disease, which can affect or limit a person's mobility, hearing, breathing, language, vision, speech or mental function. One of the underprivileged segments of society is the disabled. Digital and other divides exist for this part of society. This segment covers all ages, economic status, location, gender, and education brackets.

Two myths are associated with the disabled:

- People with disabilities have lower job performance ratings and lower job retention

- Accommodating employees with disabilities is expensive

Both of these have been proved false in studies carried out in developed nations (National Organization on Disability 2001).

The following activities are Prerequisites for the remaining Planned Actions:

- Improve the general environmental requirements for the disabled through a legal framework that makes such facilities mandatory
- Make ready the legal framework needed for employment of the disabled
- Implement employment laws and regulations and monitor them

A promotional campaign would be required to increase public awareness of such employment and environmental requirements.

##### *Budgetary Estimate:*

Category A (Less than US\$200,000)

#### SOC-2.14: Disability Training, Counseling and Technology Center

Type	Consulting Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Public Service, Skills Development, Vocational Training and Labor
Implementation Agencies	Ministry of Public Service, Skills Development, Vocational Training and Labor in collaboration with the Ministry of Education, Science, Technology and Scientific Research, the Ministry of Health and the Federation of Associations and Centers of People with Disabilities of Rwanda

#### Planned Action Details

##### *Purpose:*

To set up an entity that manages a center for the disabled. This center would have three main objectives, namely training, counseling and the advancement of technological resources.

##### *Description:*

This Planned Action is part of three projects that aim at improving the situation of the disabled by providing them with information and counseling, creating opportunities for their employment through the use of ICT, as well as through improving their ICT competence.

Disability is a condition caused by an accident, trauma, genetics, age or disease, which can affect or limit a person's mobility, hearing, breathing, language, vision, speech or mental function.

A center needs to be launched to provide the following three services:

##### *Training of the Disabled:*

- To train the disabled in basic ICT skills, using the accessibility features of different products. This would improve their chances of employment in general work situations

- To train the disabled in specialized ICT competencies, and therefore allow them to become part of the national ICT workforce

#### Counseling of the Disabled:

- Providing advice and guidance relating to work situations. This would cover informing them of their legal rights, and guidance in selecting jobs and acquiring training for specific capabilities or disabilities
- Advice on the availability and selection of jobs
- Directing the disabled towards the proper medical services
- Directing the disabled towards the proper equipment and therapies

#### Technology Center for the Disabled:

- Allow Rwanda to transfer and import technologies, ICT or otherwise, that are suitable for the disabled
- Research can be carried out in such a center, especially as relates to localization issues
- Training can also be carried out in such a center on special technologies for the disabled
- Samples of new technologies can be exhibited for trials before acquisition
- Promotion of new technologies, ICT or otherwise

The Planned Action is badly needed and can easily be supported by the private sector, and the health and insurance industries.

#### Budgetary Estimate:

Category A (Less than US\$200,000)

#### SOC-2.15: Virtual Citizen Communities

Type	Development Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	National Civil Society Platform
Implementation Agencies	The National Civil Society Platform in collaboration with the Ministry of Infrastructure and the Ministry of Local Administration, Community Development and Social Affairs

#### Planned Action Details

##### Purpose:

To allow citizen-to-citizen communication using web-based forums. The purpose would be to facilitate open and free communications between communities interested in similar social issues.

##### Description:

Rwanda is made up of many smaller communities that are isolated from one another. Such communities have an internal need to communicate, provided it does not isolate them further, as well as an external need to be understood by others.

Virtual Communities is a facility that is provided free of charge. It is already in excessive use throughout the world through user groups, web logs (see below), chat rooms and forums. Often, key portal providers provide such services. However, this can be made available by service providers in Rwanda.

Virtual communities are known to have the following benefits:

- Spread informal knowledge and information
- Increase democracy and transparency by bringing out issues into the open
- Build closer educational ties between teachers and their students
- Build closer professional ties within professional communities
- Reduce the digital divide and other disparities by exposing communities to one another

Using the facilities of virtual communities listed above is a simple matter. The Planned Action proposes a promotional awareness campaign based on several pilot projects.

#### Budgetary Estimate:

Category B (between US\$200,000 and US\$500,000)

#### SOCIAL DEVELOPMENT SUB-PLAN: THE IMPLEMENTATION SCHEDULE OF THE PLANNED ACTIONS

Planned Actions	2006				2007				2008				2009				2010			
	Q1	Q2	Q3	Q4																
SOC-2.01																				
SOC-2.02																				
SOC-2.03																				
SOC-2.04																				
SOC-2.05																				
SOC-2.06																				
SOC-2.07																				
SOC-2.08																				
SOC-2.09																				
SOC-2.10																				
SOC-2.11																				
SOC-2.12																				
SOC-2.13																				
SOC-2.14																				
SOC-2.15																				

#### MULTI-SECTORAL ECONOMIC DEVELOPMENT AND ICT-2020 POLICY IMPLICATIONS, AND RISK FACTORS OF THE SUB-PLAN

Possible Contributions to the Realization of the GOR's Multi-Sectoral Economic Development Policy

A number of the Planned Actions identified for implementation under this Sub-plan will, in broad terms, indirectly contribute to the development of some of the key sectors of the economy including agriculture, services and to some extent the industrial sectors. Specifically, the implementation of a number of the initiatives designed to use ICTs to deliver social and health services, and for supporting the roll-out of community-based and youth-focus initiatives, will indirectly contribute to the development of the services and the agricultural sectors of the economy.

A number of Planned Actions aimed at the implementation and the deployment of computer-based application systems to support specific social initiatives, will directly affect the targeted sections of the society. They will also, in the long run, influence the development of key target sectors like the services and the industrial (in particular the cottage industry) sectors of the economy. The implementation of some of these Planned Actions will also facilitate the modernization of the agriculture sector.

In a nutshell, the implementation of the Planned Actions of this Sub-plan has the potential to contribute to the realization of the GOR's multi-sectoral economic development policy.

## Areas of Emphasis as per the ICT-2020 Policy

The majority of the Planned Actions of this Sub-plan are targeted at facilitating the deployment, exploitation and utilization of ICTs within the society, with emphasis on the delivery of health services, the media, community-based activities including sports and recreation, and the protection of the vulnerable groups of society.

It is also possible that some of the Planned Actions will, in the long term, contribute indirectly towards developing the local ICT production and service provision sector of the economy by way of generating demand for ICT products and services.

The Sub-plan for social development will therefore contribute to the realization of the GOR's policy goal to pursue ICT exploitation and production policy involving the utilization and exploitation of ICTs within the economy and society; as well as the production, development and delivery of ICT products and services, i.e. towards the development and promotion of an ICT industry and service sector.

## Expectations for the Development of Rwanda's Information and Knowledge-based Society and Economy (IKE) Development Goals

It is anticipated that the implementation of the Planned Actions of the *Social Development Sub-plan* will contribute to the process of the development of Rwanda's information society and economy – the ultimate goal of the Rwandan ICT-led development vision. In particular, it is envisaged that the implementation of the initiatives of this Sub-plan will lead to the achievement of the following Information and Knowledge Economy (IKE) goals:

- The development of an economy in which the majority of the working population is either directly or indirectly involved in information and communications related activities
- The development of an economy with a modern, efficient and competitive agricultural sector
- The development of an economy characterized by widespread deployment and exploitation of ICTs to support the delivery of health, education, Government and social services
- The development of an economy characterized by a modern educational system in which ICTs are widely deployed to facilitate the delivery of educational services
- The development of an economy in which the provision and delivery of goods and services of the key sectors of the economy are to a large extent facilitated by information and communications technologies
- The development of an economy in which the provision and delivery of services by Government and its administrative machinery are to a large extent facilitated by information and communications technologies
- The development of an economy based on a literate society with a high proportion of computer-literate

## The Risk Factors

A number of Planned Actions identified for implementation under this Sub-plan relate to the development and deployment of computer-based application systems to support activities in health, sports, media and the community at large. The development and maintenance of these systems will require a reasonable investment in technological and human resources. Given that these resources could be found to develop these systems, the risk of their under-utilization may arise if procedures are not put in place for their proper deployment and usage. In some cases, the under-utilization risk could be amplified if the user-community does not embrace the system for one reason or another. The lack of ICT awareness and requisite expertise within the user-community to fully appreciate and utilize these systems can seriously lead to the under-utilization of the developed systems and applications.

Another risk may arise from key Planned Actions of the Sub-plan not being implemented. For example, this could result in preventing a large section of the Rwandan population from having access to ICTs. There is therefore the danger of widening the digital divide within the community. This may adversely impact on the demand for ICT services and products which could, in the long run, constrain the development and expansion of the local ICT service and production sector thus making it difficult to realize the goal of developing Rwanda into the service-hub of the sub-region.

## THE SUB-PLAN FOR E-GOVERNMENT AND E-GOVERNANCE

### Summary of National Strategy and Policy Linkages of the Sub-plan

#### Relevant Vision for Rwanda (VfR) Mission Strategies

To improve the efficiency of the Civil and Public Service.

#### Relevant Government Policy Commitments

*Commitment to the Deployment of ICTs to Support the Operations of the Civil and Public Services*

The GOR acknowledges the crucial role that ICTs can play in the delivery of Government services, by bringing Government closer to the people, and by facilitating the implementation of the Government's decentralization and "villagization" policy to support the activities of the local administrative units.

The GOR is therefore committed to the deployment and exploitation of ICTs to support the operations and activities of the civil and public services as part of its commitment to the modernization of the civil and public services to facilitate administrative cost reduction and the promotion of efficiency in the delivery of Government services to the people of Rwanda.

#### Relevant ICT4D Policy Expectations

- Contribute to the development of the national human resource capacity to meet the changing demands of the economy
- Support the development of the national information and communications infrastructure
- Facilitate the development and promotion of the necessary standards, practices and guidelines to support the deployment and exploitation of ICTs within the society and economy
- Promote widespread deployment and access to information and communication technologies and resources within the community in both the urban and rural areas of the country
- Contribute to the development and implementation of e-Government, e-Commerce and e-Education in Rwanda

## Policy Action Items

To implement its ICT4D policy intentions in the area of e-Government and e-Governance within the context of facilitating the development of the Rwandan information and knowledge-based economy and society, the Government is committed to implementing specific Planned Actions targeted at achieving the objectives and goals of the following policy action items:

### *Policy Action Item 1: Prerequisites to Support the e-Government Initiative*

- Implement policies related to making Rwanda e-ready
- Ensure the proper implementation of a Government-wide network (GovNet)
- Increase direct Government ICT expenditure
- Improve the use of donor funding for ICT projects by better planning, coordination and monitoring
- Build the capacity of the public sector workforce by raising literacy requirements, training and incentives
- Increase PC penetration rate in the public sector making computers accessible in offices and Government facilities
- Increase access to the Internet for the entire public sector workforce
- Set up an inventory of ICT projects in the public sector to ensure that experience can be shared, duplication avoided and status can be known with speed and accuracy
- Set up an inventory of ICT resources in the public sector using modern configuration management techniques whose purpose is to facilitate global purchasing, standardization, reduce training costs, change control and efficient upgrade planning
- Enter into global licensing software and hardware agreements

*Policy Action Item 2: Adopt a Top-Down and a Horizontal View of e-Government Implementation*

- Establish an entity that has the responsibility for planning and coordinating e-Government efforts, without being a controlling or restrictive agency
- Develop ICT strategic plans for each Ministry and agency to ensure that their strategic applications are efficiently implemented
- Learn from the lessons of other countries through research and cooperation
- Develop performance indicators that will allow the Government to monitor and evaluate all its processes
- Ensure that implementation cuts across Ministries and agencies horizontally so that complete business processes are automated and not just departmental Planned Actions
- Identify and standardize the core design criteria for e-Government applications in terms of portal design, look and feel, and minimal content
- Identify “re-usable” applications and ensure that duplication does not take place
- Implement standardized data dictionaries and controlled data exchange to ensure proper ownership of information
- Decentralize Government operations



*Policy Action Item 3: Implement Administrative Reform and Develop the Public Sector*

- Acquire political commitment for the process. Without this, little success can be achieved
- Link the effort for administrative reform and development with the strategic objectives of e-Government which need to be considered when business processes are to be re-engineered
- Develop three main objectives for administrative reform: (i) organizational reform and development; (ii) human resource development; and (iii) legislative reform and development
- Implement administrative reform in terms of re-engineering the business processes, where the stress is on the concept of process

*Policy Action Item 4: Make the Public Sector More Effective and Efficient*

- Implement the citizen's Smartcard, which would include updatable data elements for use in various agencies as a source of critical data and authentication
- Modernize procurement laws and procedures and improve purchasing cycles through e-Procurement systems
- Remove such poor practices (anti-patterns) as offloading work onto the citizen, multi-agency processes, excessive controls, displaced controls, duplicated information, multiple transcriptions of data, and multi-visit procedures
- Eliminate the use of financial rubber stamps by implementing a prepaid payment card that can be used to settle minor charges
- Implement document and procedure tracking systems for improved transparency, tracking and efficiency
- Through ICT, mix centralization and decentralization of processes in order to achieve the benefits and avoid the drawbacks of each
- Improve the status of ICT units in all Government entities (ITSDs)

*Policy Action Item 5: Use Appropriate Technologies for e-Government*

- Implement workflow management at the heart of e-Government
- Standardize and regularize data dictionaries and implement data exchange to reduce cross departmental bureaucracies
- Implement document management systems to manage mail, archives and moving transactions
- Use e-cards for payments, identification, etc

*Policy Action Item 6: Widen Private Public Partnerships*

- Promote and develop Government-to-Business Services (G2B)
- Promote and develop Government-to-Government Services (G2G)
- Promote and develop Government-to-Citizen Services (G2C)
- Encourage dialog with the private sector through various means such as conferences, websites, associations, etc
- Promote privatization efforts

*Policy Action Item 7: Improve Accountability*

Accountability is the capacity to call officials to account for their actions and to ensure that the consequences of such actions are also clear and predictable.

ICT can enhance accountability through the following:

- The design of systems that track all actions within all procedures
- Such systems will also be able to analyze various performance indicators to measure bottlenecks, slow service, exceptional processing, etc
- The design of systems that collect feedback from serviced citizens and private sector companies
- Conduct ongoing surveys to assess citizen's satisfaction with accountability

*Policy Action Item 8: Improve Transparency*

Transparency consists of the free access to comprehensive and useful information. Information is required by citizens, and the private and public sectors. Information is required for democratic decision making by these three parties. Citizens must have access to information so that they may participate meaningfully in decision processes and make informed choices.

Transparent decisions are more effective because they permit evaluation and strengthen institutional credibility and legitimacy.

Although transparency has come to be used as a euphemism for “lack of corruption”, it is through implementing transparency that a Government can reduce corruption.

ICT can enhance transparency through the following:

- Information should be made available about all public sector processes, rules and regulations
- Information is required about the performance of Government in all areas under its responsibility. Therefore, reliable and timely social, economic and financial information is a must for the citizen
- Access to such information should be wide, equitable and free
- Information must be made available in an official manner. It is not useful to provide information that cannot be used for decision-making. An agency that publishes a list of its procedures where those are not complied with or by its own employees is not a transparent agency
- Conduct ongoing surveys to assess citizen's satisfaction with transparency

#### *Policy Action Item 9: Improve Predictability*

Predictability covers laws and regulations that have unambiguous interpretation, are known in advance, and are uniformly implemented. When laws and regulations are not predictable, they lead to improper planning, poor performance, interference and corruption. They also weaken the judiciary system by leaving much too subjective judgment.

Although ICT cannot influence predictability directly, e-Government ICT legal frameworks, practices and processes must be predictable.

#### *Policy Action Item 10: Improve Citizen Participation in Governance*

Participation is needed for good governance to ensure that all citizens can have a voice in decision making, whether directly or through their legitimate intermediaries. Governance is therefore dependent on listening to the parties being governed. This acts as an ongoing “audit” of Government performance. It also has the benefit of inciting Government to improve its operational efficiency.

ICT can enhance predictability through the following:

- Provide citizens (and their representative structures) and the private sector with channels through which they can express their views
- Provide equitable access where all citizens, regardless of which segment they come from, can use such channels
- Incite Government to respond to such views
- Empower communities by providing them with their own local information processing
- Allow citizens to access all Government documents
- Provide access to relevant information and processes, which encompass education, culture, policy and regulation, infrastructure, and public facilities
- Clarify such information
- Promote dynamic dialogues between decision makers and the public
- Provide access to guidance from the Government on such issues of concern to the citizen as consumer protection, transportation, traffic and driving, legal issues and services, Government procedures and health information and services

## PLANNED ACTIONS

### GOV-2.01: Document Tracking and Workflow Management

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> Revision of work procedures would be necessary to ensure the reduction of paper-based procedures <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2010
Planned Action Ownership	RITA
Implementation Agencies	RITA in collaboration with the Ministry of Infrastructure and all Ministries and agencies

#### Planned Action Details

##### *Purpose:*

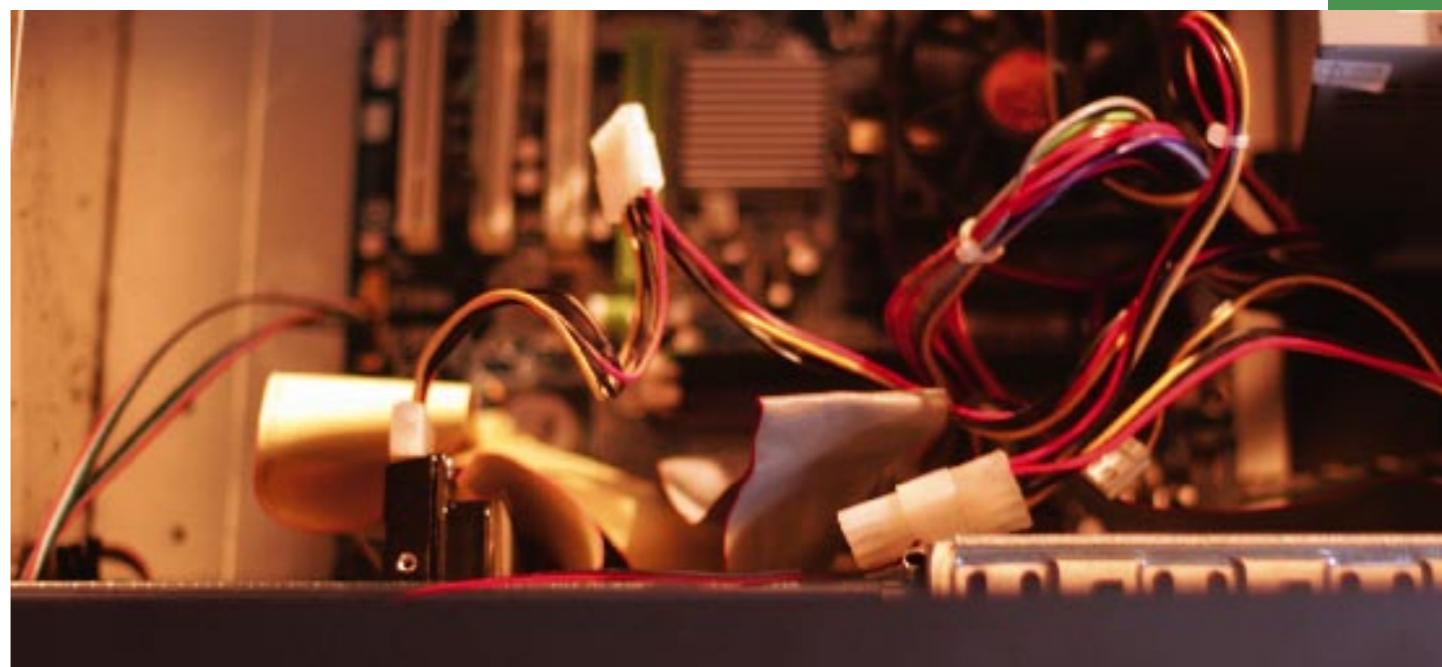
To provide a system that can be used in any Ministry, agency, or large organization to track the progress of documents through their life cycles. The same system can be used to register all incoming and outgoing mail. Another aim is to provide scanning facilities in case documents being tracked or registered need to be archived. The system would also enable secure and consistent storage of documents. It can increase efficiency and reduce costs by including powerful and fast search facilities.

##### *Description:*

This Planned Action will include document tracking, workflow management, archiving of documents, and powerful search-and-retrieve facilities.

##### *Benefits:*

- To drastically reduce the use of paper-based processing in public and private organizations
- To automate, accelerate and simplify administrative processes



- To eliminate petty corruption, such as extracting favors in order to speed up the processing of transactions or documents
- To measure the productivity of administrative staff
- To increase accountability and transparency
- To increase efficiency, by analyzing the turn-around time of such documents
- To recognize inefficiencies by tracking nodes in processing documents
- To increase confidence in the public sector by giving citizens information on the status of their documents and transactions at any given time
- To reduce the burden on the citizen to follow up at the agency, which in turn reduces the workload of the employees

*Current and Ongoing Work:*

Elements of this Planned Action have already been deployed across many Ministries in Rwanda

*Budgetary Estimate:*

Category D (between US\$800,000 and US\$1,000,000)

*Schedule:*

Phase 1: Develop a standardized systems design that can be applied to most public sector processes (three months).

Phase 2: Develop the software applications (six months).

Phase 3: Implement a pilot project in one directorate or unit (three months).

Phase 4: Complete the rest of the implementation effort across the rest of the Ministries (two years).

A Planned Action is required to document in complete detail each procedure in each public sector agency that the citizen or the private sector interacts with.

The Planned Action requires the following steps:

1. Identify a team to visit and analyze the various agencies.
2. Identify each and every procedure whereby the citizen or the private sector interacts with the public sector. For each procedure:
  - Define in detail the steps needed to start and complete the procedure
  - Define the exact location where each step takes place
  - Define the required forms or documents needed at each step
  - Identify the person/s responsible for different tasks at different stages of the procedure
  - Define the fees needed to complete the procedure
  - Estimate the time needed for different stages of the procedure
3. Survey various citizens to collect views on effectiveness of the projected services.
4. Once the procedures are defined, they need to be verified and approved by each agency. Without the agency's approval, the procedures are subject to interpretation and unpredictable processing.
5. A mechanism is then set into place to ensure that agencies communicate to the owner of the project each and every change to the procedures.
6. Complaints: A page on the web can be created that allows anyone to query procedures and report incidents that are discrepant with the published steps and conditions. This can be complemented by a complaints desk or box in each agency where such complaints can be made in written form.
7. Ongoing surveys: These can be conducted on a regular basis to assess the citizen's general levels of satisfaction with the above services.

The way the information is published is varied and consists of the following:

- A website containing all procedures in the three most common languages in Rwanda. The web can also contain downloadable forms. It can also contain the facility to download single or full sets of procedures
- A printed catalogue in Rwanda's three official languages
- Summarized fliers to be provided at the information desk of each agency
- Where possible, usually within the related department itself, posters can be put up to facilitate access
- A CD that can be made available to various agencies such as airports, embassies, government offices, etc
- Separate those procedures that relate to expatriates living in Rwanda or about to visit Rwanda and publish them in English and French
- Distribute the database to various centers such as embassies, airports, etc

*Benefits of the Planned Action:*

- Transparency as each procedure is completely exposed
- Efficiency as the load on the public sector will be reduced
- Reduction of the effort and frustration of the citizen and the private sector
- Accountability as delays or inefficiencies can be located
- With knowledge of how each procedure takes place, it becomes simpler to improve or re-engineer inefficient procedures

*Current and Ongoing Work:*

None

*Risks:*

- Procedures may be changed without being updated
- Dissemination may be inefficient leading to the inefficiency of the deliverables
- The project is launched when there is still a low literacy rate

### GOV-2.02: The Citizen's Guide to Governmental Procedures

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> To legalize all procedures and present them in a manner that proves their related Ministry or agency has endorsed them. This would make them valid for use with the public sector staff.</p> <p><i>Linkages:</i> Multipurpose Community Telecenters (MCTs) Free Information Access Points (IAPs)</p>
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	RITA
Implementation Agencies	RITA in collaboration with all Ministries and agencies and the National Civil Society Platform

#### Planned Action Details

*Purpose:*

To define and document all procedures that the citizen or the private sector needs to interact with the public sector.

*Description:*

There is often a lack of knowledge by the citizen of the requirements and steps needed to complete a specific procedure or transaction in the public sector. This often results in wrong or missing forms and multiple visits.

Such procedures will be detailed in a step-by-step manner and published through such media as the in-house posters, web, hard copies or CDs.

**Budgetary Estimate:**

Category C (Between US\$500,000 and US\$800,000)

**Schedule:**

Phase 1: Survey and define procedures (four to six months).

Phase 2: Media set up and project launch (three months).

Phase 3: Ongoing updates with the completion of the first two phases.

GOV-2.03: Rwanda National Portal	
Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisite:</i> The portal Planned Action should be an initiative administered by a top-level entity. This entity should facilitate procurement of commercial products and a wide range of services on IT products and services. It would develop and implement Government-wide policies. It is important to realize that site developments are not part of its responsibilities but should be handled by the various Governmental institutions. The role is a coordinating role</p> <p><i>Linkages:</i> All Planned Actions with portals</p>
Time-Bound Target	Fourth quarter of 2010
Planned Action Due Date	
Planned Action Ownership	Office of the President
Implementation Agencies	Office of President in collaboration with RITA and all Ministries and agencies

**Planned Action Details****Purpose:**

The purpose is to develop an official Rwandan gateway to all governmental and non-governmental information and procedures.

**Description:**

In emulating the practice of other countries, one National Portal is usually set up to allow all visitors access to a variety of information about the nation. Visitors will include the Rwandan population (citizens, private sector, etc) as well as non-Rwandans wishing to visit or do business with Rwanda. This will be the base from which all other Government portals are launched. As and when various institutions develop their portals, they can be subsumed under the main Rwanda Government Portal. It is important to note that this is not strictly an e-Government portal. It will not replace other portals. For example, the electricity department may have its own website and is indeed encouraged to do so. However, to make Rwanda “one click away”, it is important to centralize the start point of the search. Later on, the citizen can choose either path to get to the department.

**Key Deliverables:**

- Gateway to all Government information acting as the “front door” to all e-Government related services
- One-stop point of access to all Government and citizen-related information and services
- Search engine
- Multi-lingual (English, French, Kinyarwanda)
- Sub-portals organized around customer groups and topics, in addition to ministries/agencies. For example, the “people with disabilities” section is a cross-sector
- General sections should be: Citizens, Businesses, Government Employees, Government-To-Government, NGOs and International Organizations/Donors
- Help find and do business with government on-line, on the phone, by mail or in person
- Allow quick access to enable conducting business without needing to know which department or agency provides it. This helps cut through governmental red tape to find on-line services that matter to the citizen and business
- Frequently Asked Questions (FAQ) section for the top/newest questions with answers
- Alert/notification services for relevant information in relevant sections
- Customer Satisfaction – an on-line customer satisfaction survey using acknowledged international Customer Satisfaction Indexes should be put in place for use by citizens and the private sector. The survey should randomly select visitors to the site and ask them a series of questions about their on-line experience
- Finally, and most importantly, the Rwanda National Portal is also to be seen as a “framework” for the development of standardized websites in Rwanda. This means that the entity in charge of this portal will define and promote guidelines and standards (logos, fonts, banners, etc) that others need to use when developing their own websites.

**Benefits of the Planned Action:**

- Locate Rwandan information under one site
- Standardize portals in Rwanda to ease learning and access

**Current and Ongoing Work:**

There is already a Government website maintained by the Office of the President

**Risks:**

- There is the risk of the Government falling into a “point of presence”, providing information about ministries rather than Planned Actions for the citizens
- Improper choice of entities
- Lack of standardized practices for the various sub-portals
- Independent websites being launched outside the main portal

**Budgetary Estimate:**

Category B (between US\$200,000 and US\$500,000)



**Schedule:**

Phase 1: Establish the entity that will be responsible for developing the portal and coordinating all work needed for it (around two months).

Phase 2: Develop the Government Portal (around three months).

Phase 3: An ongoing phase. In this phase, the entity shall coordinate the web-development work of all governmental institutions.

GOV-2.04: Budget Management System	
Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> BMS needs to follow official budget procedures <i>Linkages:</i> None
Planned Action Due Date	Third quarter of 2006
Planned Action Ownership	Ministry of Finance and Economic Planning
Implementation Agencies	Ministry of Finance and Economic Planning

**Planned Action Details****Purpose:**

This application is at the core of the Smart Government suite. Its purpose is to allow preparation of detailed Government budget lines and to manage budget execution.

**Description:**

It works hand in hand with the application managing external sources funding to:

- Manage the processes of budget preparation (recurrent budget and development budget)
- It uses the Medium Term Extended Framework (MTEF) standard
- It supports multiple budget drafts
- It allows multiple options in budget execution – contracts, salary payments, invoices, etc
- It follows official budget steps
- It is integrated with Public Accounting and Central Bank
- It has seamless access to third-party reporting engines such as Crystal Report

**Benefits of the Planned Action:**

- Timely preparation and execution of budget
- Increased transparency
- Timely payment of suppliers

**Current and Ongoing Work:**

An initial implementation has been deployed in the Ministry of Finance and was used to prepare the Budget Law 2006. The execution module will be used starting January 1, 2006.

**Risks:**

Lack of understanding by Government officials about support costs of such a piece of software may result in lack of support funding.

**Budgetary Estimate:**

Category C (between US\$500,000 and US\$800,000)

**Schedule:**

The first module of this Planned Action has already been used and all its actors have been trained. The execution module will need training of end-users by mid-November 2005, enhancements and bug fixes when it starts being used by Jan 1, 2006, and general ongoing support.

**GOV-2.05: Tax Management System**

Type	Development Projects
Relevant NICI-2005 Plan	<b>This Planned Action corresponds to C4.5 of the NICI 2005 Plan</b>
Roll-over Planned Actions and Initiatives	C4.5: Implement the Rwandan Tax Administration and Information System (R-TAIS)
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Second quarter of 2007
Planned Action Ownership	Ministry of Finance
Implementation Agencies	Ministry of Finance in collaboration with the Private Sector Federation

**Planned Action Details****Purpose:**

To provide a tax management system that is integrated with the other public accounting applications.

**Description:**

This is part of a set of applications to make up the Integrated Financial Management System of the State allowing the Government to produce financial statements for its finances. The main features are:

- Taxpayer registration through the National ID application
- Station-based revenue collection – declarations of many types of tax; bank consolidations; reporting of collections
- Departmental revenue collection
- Central Revenue Collection – management of collections by station; consolidation with central Bank; reporting collections to Government



***Benefits of the Planned Action:***

- Increases in speed, accuracy, transparency and flexibility
- Reduced load on the Revenue Collection Agency

***Current and Ongoing Work:***

An initial prototype has been developed and is under evaluation by the Revenue Collection Agency

***Budgetary Estimate:***

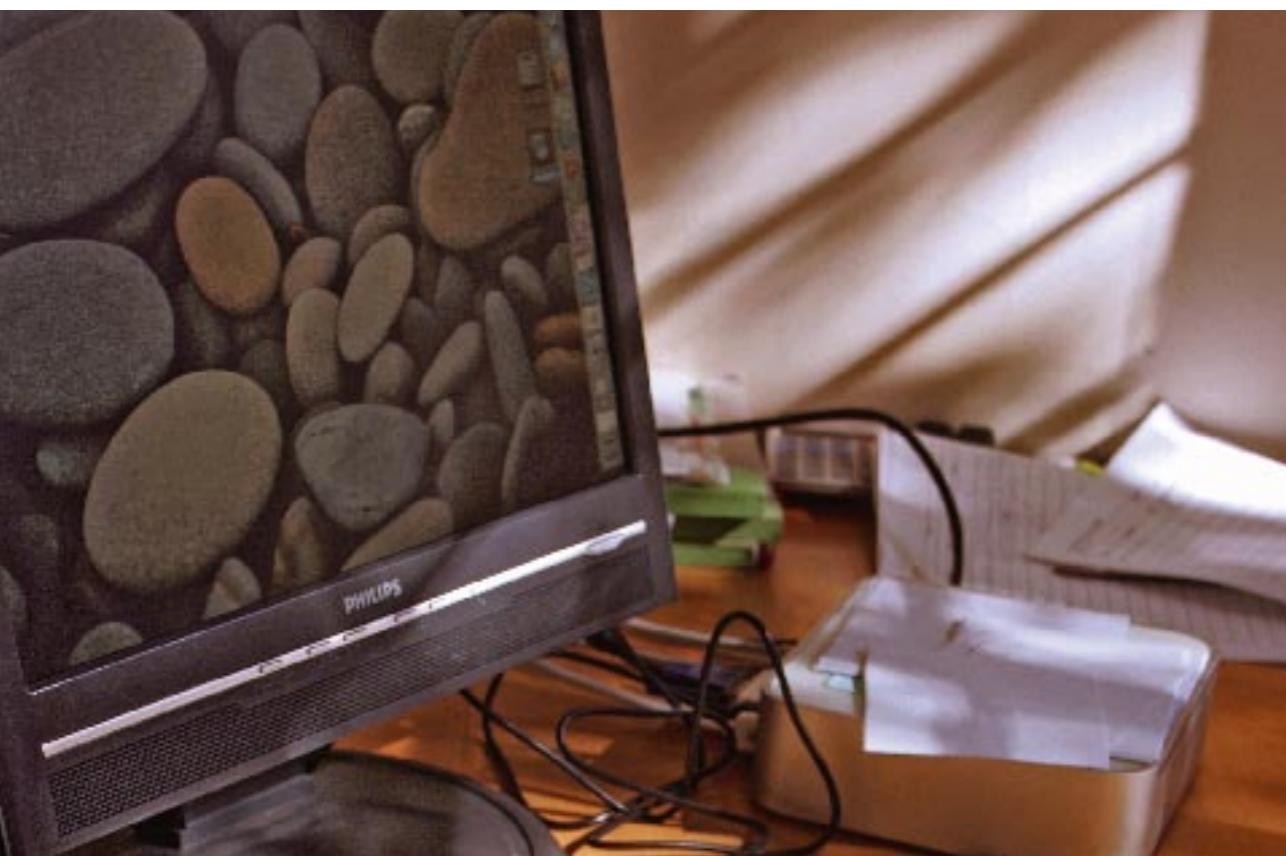
Category C (between US\$500,000 and US\$800,000)

**GOV-2.06: External Finance Inflow Management System**

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Third quarter of 2006
Planned Action Ownership	Ministry of Finance and Economic Planning
Implementation Agencies	Ministry of Finance and Economic Planning

**Planned Action Details*****Purpose:***

Management of development projects, integrated definition of public projects and development budget, and financial execution of projects as development budget execution.

***Description:***

This Planned Action will allow the Ministry of Finance and Economic Planning and its various departments, as well as the local authorities, to have better visibility into external resources with better projects planning.

One of the issues currently faced with investment sub-projects and funding sources is the lack of public control. By unifying the Budget Process Management, this system will allow the relevant entities to manage the financial aspects of these external projects and their associated resources.

***Current and Ongoing Work:***

An early pilot has been developed and is under evaluation.

***Risks:*** Insufficient funding.***Budgetary Estimate:***

Category A (Less than US\$200,000)

**GOV-2.07: Public Accounting**

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Third quarter of 2006
Planned Action Ownership	Ministry of Finance and Economic Planning
Implementation Agencies	Ministry of Finance and Economic Planning

**Planned Action Details*****Purpose:***

To establish a Public Accounting Planned Action that collects financial data from revenue collection, budget execution and central bank data, and presents them in accounting terminology, running various financial reports on the State finances, including cash flow statements.

***Description:***

This Planned Action reconciles data from tax management, budget management, and other applications.

This Planned Action uses XML and Web Services Technologies to integrate different Smart Government projects independently of their physical location or the software platforms used.

***This will allow:***

- Better handling of the finances of the country
- Better financial reporting
- State suppliers will be paid with minimum or no delay

***Current and Ongoing Work:***

A prototype has been developed and is under evaluation by the Ministry of Finance.

***Budgetary Estimate:***

Category C (between US\$500,000 and US\$800,000)

GOV-2.08: Border Control and Visa Issuing	
Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Time-Bound Target: Planned Action Due Date	Third quarter of 2006
Planned Action Ownership	Directorate of Immigration and Emigration
Implementation Agencies	Directorate of Immigration and Emigration in collaboration with the National Institute of Statistics (NIS)

#### Planned Action Details

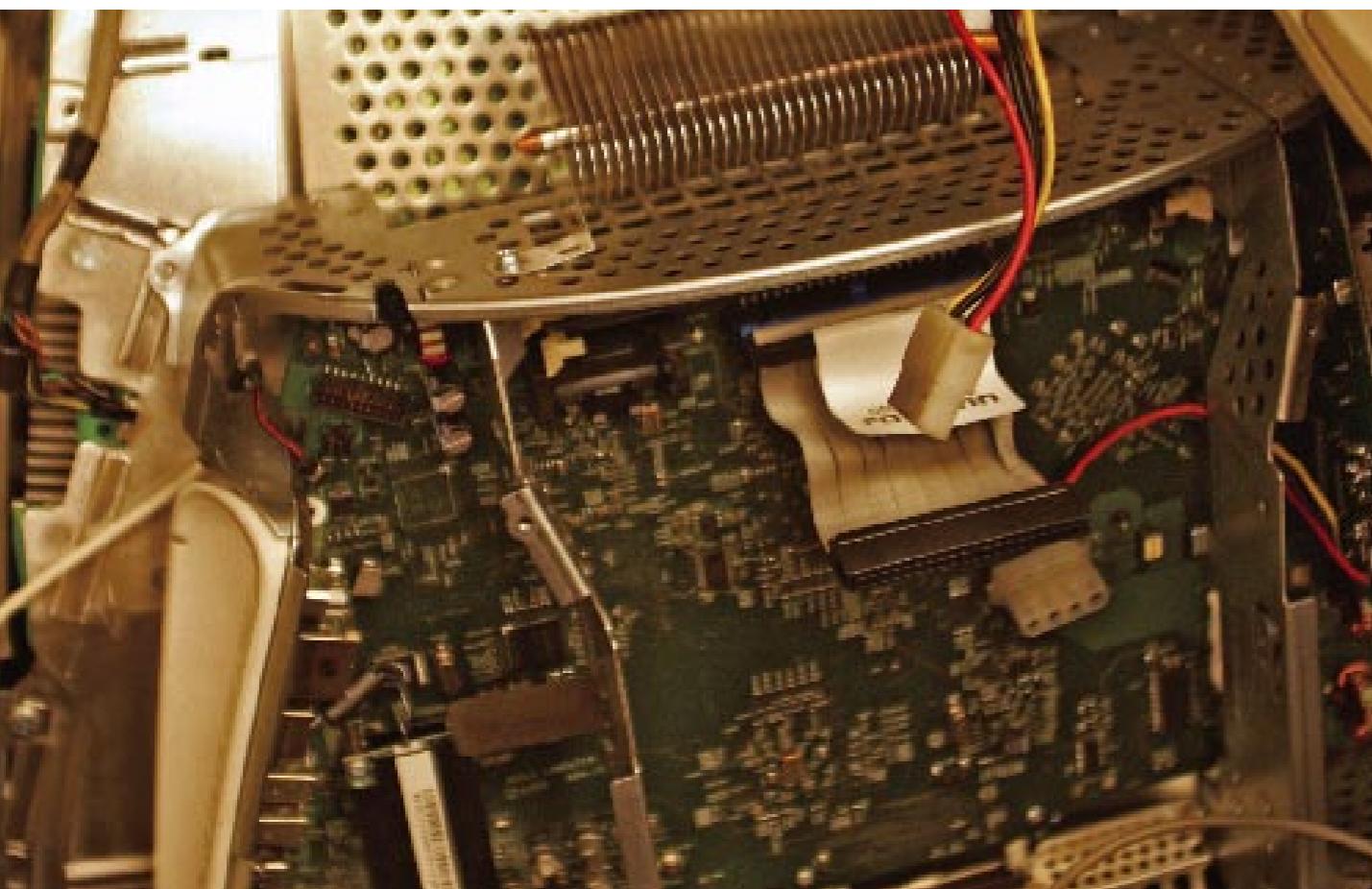
*Purpose:*

The purpose of this Planned Action is to support the Immigration and Emigration Departments.

*Description:*

This Planned Action aims at empowering the Immigration and Emigration Departments through the following:

- Simplify entry and exit processes
- Simplify obtaining travel documents
- Collect migration information on visitors and nationals who travel abroad
- Filter out ineligible travelers
- Automate payments and improve Government financial reporting



This will ensure the following benefits:

- Increased productivity, efficiency and transparency in the Immigration and Emigration Departments
- Faster and friendlier customer service for the traveling public
- Improved security records
- More efficient immigration procedures inspire confidence in potential foreign investors

*Current and Ongoing Work:*

Elements of this Planned Action have already been deployed and are in use.

*Budgetary Estimate:*

Category B (between US\$200,000 and US\$500,000)

#### GOV-2.09: Implementation of a National ID and Smartcard System

Type	Institutional Projects
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of G7.4 of the NICI 2005 Plan</b>
Roll-over Planned Actions and Initiatives	G7.4: The National Identity (ID) Card System Computerization Project
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Local Administration, Community Development and Social Affairs
Implementation Agencies	Ministry of Local Administration, Community Development and Social Affairs in collaboration with the National Statistical Institute (NIS)

#### Planned Action Details

*Purpose:*

To provide every citizen with a Smartcard based on a national ID. The Smartcard will include additional information that is useful to various entities in Rwanda such as health, traffic, etc.

*Description:*

One of the key issues in any country is the identification of its citizens. There is no replacement for a national ID card based on a robust civil register.

This Planned Action proposes the introduction of a National ID implemented on a Smartcard, which contains information and data about the citizen such as:

- Civil information
- Health information
- Traffic information (driving license, etc)

The Smartcard will contain information about each citizen for use in terms of knowledge or authentication. The data elements to be included on the Smartcard need to be analyzed.

The recommendation here is to proceed with the following:

- Finalize the registry so that all citizens in Rwanda are correctly registered
- Revise the necessary legal procedures needed to remove authentication required from the citizen even if the ID is produced. The ID becomes the final and only reference in all public transactions
- Coordinate with the Data Exchange project presented as another Planned Action to identify the data elements needed on the Smartcard
- Produce and distribute the Smartcard

**Benefits of the Planned Action:**

- Reduced need for authentication
- Tracking of citizens' transactions
- Reduced duplication for identity, which is common in different agencies

**Risks:**

- Errors in identification
- Poor cards leading to incorrect data
- Long procedures to issue new cards

**Budgetary Estimate:**

Category H (between US\$9 million and US\$15 million)

**Schedule:**

Phase 1: Set up the entity that shall govern and coordinate the various activities of this Smartcard and ID production (around two months).

Phase 2: Define the contents of the card and design the card itself (around four months).

Phase 3: Produce the card and distribute it to citizens. This is a complex activity and needs to be planned properly (around eight months).

- Connecting them through a Wide Area Network
- Integration of ICT in the day-to-day postal services
- Harmonization of the legislation and regulation
- Modernization of Postal Bank and financial postal service
- Reinforcement of cooperation and increased influence at international level

**Benefits of the Planned Action:**

Rwanda, like the rest of the developing world, needs high quality postal systems. Postal services provide communication and information as well as basic logistical services at affordable prices on a countrywide basis. They also offer connections to the outside world. In some cases, postal services are the only providers of these functions for consumers and businesses. They contribute to the social well-being and help in bringing people together. In addition, businesses need postal services to reach consumers. Industry and trade development depend to a large degree on the postal sector. Reliable postal services form an important part of a modern infrastructure. In many countries, the postal network also plays an important role by offering basic financial services, especially in remote areas where no other banking services exist. Postal services reach out into all parts of a country (and beyond the national boundaries) and are often the most universally available and economic forms of communication.

The comprehensive postal networks (collection and delivery, transportation, retail outlets) can also be used for a wide range of value-added services, especially in providing functions that can facilitate electronic business. A modern postal system can help to provide logistical Planned Actions in integrating data flows, physical flows and financial flows. The posts can provide fulfillment and delivery functions ("bits become boxes") for e-Commerce as well as trust center and payment services. Postal retail outlets can be used for providing access to the Internet via public terminals, and in order to develop customer relationships, postal products, especially direct mail, can play a crucial role.

**Current and Ongoing Work:**

Rwanda has been selected by the Universal Postal Union (UPU) for a pilot e-Postal. Besides, the International Telecom Union (ITU) it is also sponsoring a pilot to establish Public Information Kiosks (PIKs) using the Post Office network.

**Budgetary Estimate:**

Category D (between US\$800,000 and US\$1,000,000)

**GOV-2.10: Automation of Postal Services**

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> Like in the telecommunications sector, major legislative, regulatory and institutional reforms have to create the platform for vitalizing the sector and for increasing private sector participation. Deregulation and market liberalization or clearly defining universal service obligations are as important as finding the appropriate legal status for the incumbent postal operator</p> <p><i>Linkages:</i> The Public Information Kiosks (PIKS)</p>
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	Post Office Service
Implementation Agencies	Post Office Service

**Planned Action Details****Purpose:**

The purpose is to modernize the Post Office in order to provide a more efficient service to the people of Rwanda. This is to be achieved through a widespread automation of the postal services.

**Description:**

The Post Office must become an operator in dissemination of ICT-based services while adjusting to socio-economic and technical changes in order to respond to the population's requirements. Postal development includes the modernization of the entire postal sector and the transformation of public postal authorities into market oriented and financially viable businesses. The postal sector is regarded as a critical part of Rwanda's information and communication infrastructure, and recognizes the importance of modern postal systems in the "new economy".

**Key deliverables:**

- Rehabilitation and expansion of branch offices

**GOV-2.11: Establishment of an Information Decision Support Center (IDSC)**

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i> None</p>
Time-Bound Target:	Fourth quarter of 2009
Planned Action Due Date	
Planned Action Ownership	The Prime Minister's Office
Implementation Agencies	The Prime Minister's Office, in collaboration with The President's Office, the National Statistics Institute (NIS), the National Computing Center, the Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives, the Ministry of Agriculture, and the Ministry of Health

## Planned Action Details

### Purpose:

To provide valid and robust information for use in decision-making by key central authorities.

Data and information in Rwanda are fraught with problems such as low availability, unreliability and multiplicity. This frequently stands in the way of proper decision-making. Following the model of the IDSC in Egypt, which has been extremely successful, the proposal is for the establishment of an Information Decision Support Center (IDSC). The IDSC's main purpose will be the analysis of data and information required by such agencies as the Presidency, the Cabinet, the Parliament, various Ministries and Agencies, and others.

The information can be in the following forms:

- General data to be disseminated to key recipients
- Specific studies carried out to resolve and clarify problematic issues
- On-going collection of useful information, indicators and other data
- Information for international agencies that publish countrywide data in various sectors such as the World Bank, the ITU, etc

The media for dissemination can vary from printed matter, to CDs and special-purpose websites.

The center would deal with ICT, statistics and various socio-economic issues. It would work closely with the National Bureau of Statistics, which already has a large base of information.

### Budgetary Estimate:

Category D (between US\$800,000 and US\$1,000,000)

On completion of such an analysis, it will then be converted into a functional or conceptual design. Such a design would be submitted to the users and the stakeholders of the Agency for review.

Once approved, this design becomes the basis of further inquiries in the ISP. Such issues can now be resolved:

- What is the current inventory of ICT resources?
- What additional ICT resources are needed to meet the above requirements?
- What are the implementation priorities of the various systems and applications?
- A proposed schedule phased into the above priorities.
- An estimated budget based on the above schedule
- Presentation of the proposed technical Planned Actions.

ICT Strategic Planning results in an overall view, which provides the Government with the following:

- Standardization of applications
- Avoidance of duplication as the planning exercise will identify similar applications that are needed in different agencies (materials control, attendance, accounting, document tracking, etc)
- Bulk purchasing to meet the required ICT resources
- Resolution of interfacing problems at an early stage

More importantly, a concerted effort to develop such plans would also require proper coordination so that an overall strategy can be streamlined covering such areas as interfaces, data exchange, duplication and training, and licensing cost reductions.

If resources are not available for a global analysis, the Planned Action can group the Ministries and agencies into top, medium and low priority agencies starting with the top priority group.

In particular, ICT Plans for the priority (Batch 1) Ministries should be developed in earnest. Already, the Ministry of Health is working on its plan.

### Budgetary Estimate:

Category C (between US\$500,000 and US\$800,000)

## GOV-2.12: Develop Strategic ICT Plans for Each Ministry and Agency

Type	Consulting Projects
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of G2.4 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	G2.4: All Government Ministries and PSOs to develop their respective organization specific implementation plan based on their assigned programs and initiatives in the NICI-2020 Plan
Planned Action Pre requisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	RITA
Implementation Agencies	RITA in collaboration with all Ministries and Agencies

## Planned Action Details

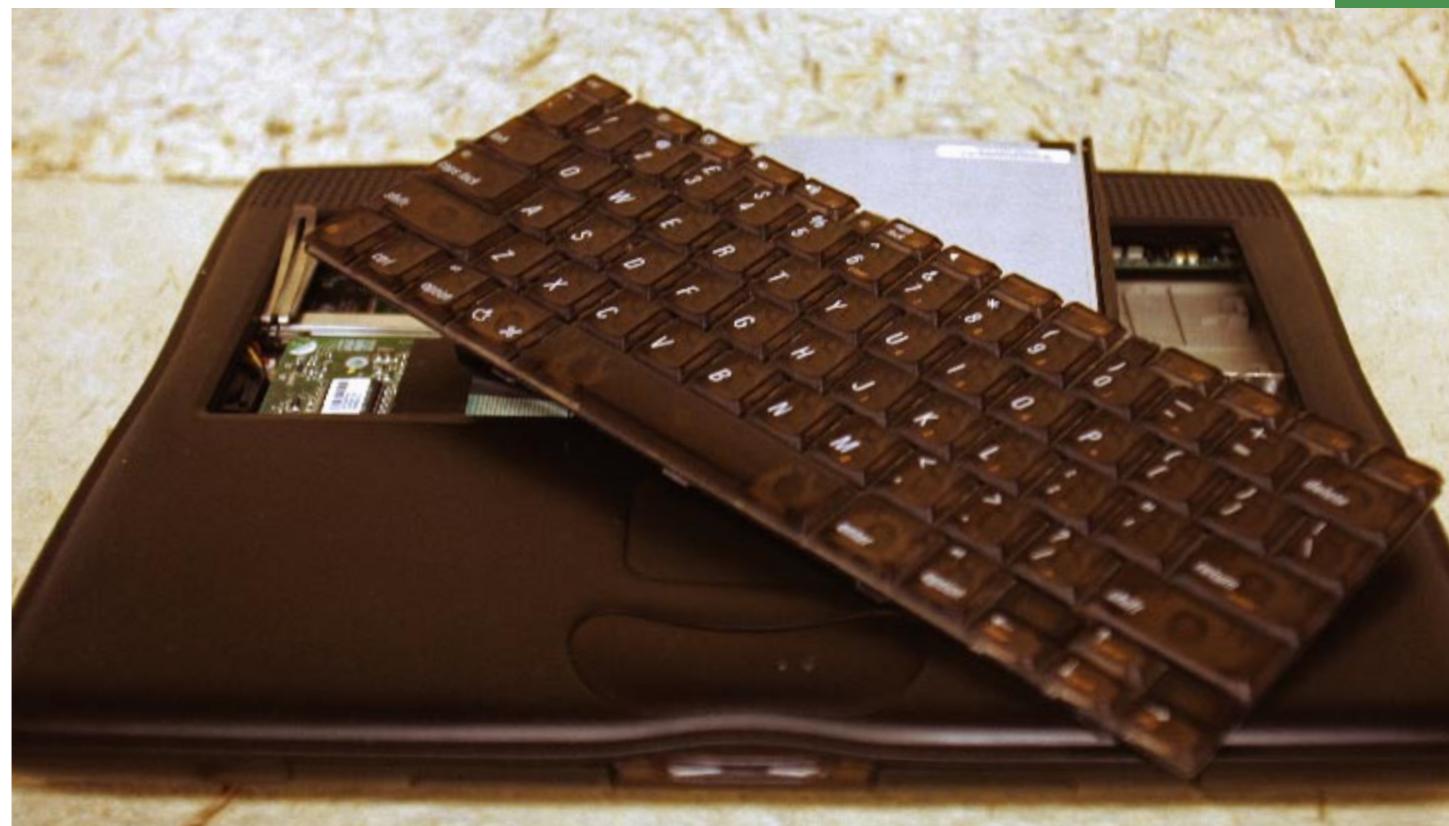
### Purpose:

To develop strategic plans for ICT in each Ministry and Agency.

### Description:

Currently, RITA is coordinating this. However, a major thrust in this direction would have benefits as discussed below. This Planned Action proposes a plan that prepares an ICT Strategic Plan in stages, for each Ministry and Agency. The plan would analyze the following:

- The short- and long-term needs of the Agency
- The requirements of the citizen and how these can be subsumed under e-Government initiatives
- The interaction with other agencies
- The interaction with the private sector both local and international



GOV-2.13: Donor Coordination Network	
Type	Institutional Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Third quarter of 2007
Planned Action Ownership	Ministry of Finance and Economic Planning
Implementation Agencies	Ministry of Finance and Economic Planning in collaboration with Parliament and RITA

#### Planned Action Details

##### Purpose:

To provide information for planning, monitoring and evaluation of donor projects across Rwanda.

##### Description:

This project would be part of an effort to create a centralized unit in the Government to collect, analyze and disseminate information about progress in donor projects.

The unit would assist in providing information for the decision making process in terms of planning, monitoring and evaluation across the different sectors. It is evident from many experiences in Rwanda that central and coordinated planning is lacking across sectors and in cross-sectoral projects.

The information network would be of extreme benefit to the different Ministries, and in particular, to the Ministry of Finance, to support performance based budgeting and better planning. This network would require the different Ministries and agencies to supply it with the necessary information about project components, indicators, budgets and progress. This information would significantly contribute to progress in sectoral coordination.

##### Budgetary Estimate:

Category A (Less than US\$200,000)

#### GOV-2.14: The Citizen's Guide to Parliamentary Operations

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Time-Bound Target:	Fourth quarter of 2008
Planned Action Due Date	
Planned Action Ownership	Parliament
Implementation Agencies	Parliament

#### Planned Action Details

##### Purpose:

To introduce the citizen to the ways in which their representatives work in Parliament.

#### Description:

In order to provide more transparency and to involve the citizen in the governance of Rwanda, the Parliament wishes to develop a guide to the Parliamentary Operations. This guide will be in the form of a website, supported by printed material. The website will publish a detailed view of all parliamentary operations such as candidacy requirements, elections, legislation of laws, attendance, session rules, responsibilities of members of parliament, etc.

#### Benefits of the Planned Action:

To increase the transparency of Parliament.

#### Current and On-going Work:

This Planned Action has been approved by the Parliament and is awaiting launch.

#### Budgetary Estimate:

Category B (between US\$200,000 and US\$500,000)

#### GOV-2.15: Parliament Management Automation

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Parliament
Implementation Agencies	Parliament

#### Planned Action Details

##### Purpose:

To assist the management of Parliament in all administrative procedures as well as to provide other services such as web casting of sessions and scheduling of meetings.

#### Description:

This Planned Action is made up of four major components:

1. Administrative Systems – these are systems that aid the management of the administrative procedures of the Parliament. They cover such modules as accounting, human resources and payroll.
2. A Webcast System for Plenary sessions – this is a web-based broadcast that allows any Internet user to view the proceedings of all sessions.
3. A Library Management System for all books and documents in the Parliament. Note that the Workflow and Document Management Planned Action covers the management of all documents. The Parliament may wish to wait until this Planned Action is implemented globally rather than spend effort on a separate Library Management System.
4. An electronic announcement system of Parliament schedules.

#### Current and On-going Work:

The Parliament is already using a workflow Planned Action. However, it is restricted in scope to workflow management of procedures. The Workflow Planned Action proposed in NICI-2010 covers document management and

tracking. It is proposed, therefore, that when such a Planned Action is implemented, it should be integrated with the existing applications. It may then replace the library system discussed above.

*Budgetary Estimate:*

Category B (between US\$200,000 and US\$500,000)

**GOV-2.16: Transport Management Information System**

Type	Development Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> IEC-2.09 The Citizen's Guide to Transportation Information
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	The Ministry of Infrastructure
Implementation Agencies	The Ministry of Infrastructure in collaboration with all Government Ministries

**Planned Action Details**

*Purpose:*

To automate all procedures and systems related to transportation and which are currently under the Ministry of Infrastructure.



*Description:*

To design, acquire, install and commission a Transport Management Information System. This system will cover the planning, operations and maintenance of all Government vehicles.

The system will create a major application that defines all such vehicles. It will cover all aspects of their maintenance – materials, preventive and corrective maintenance, replacement, etc. The system will also cover all aspects of planning, i.e. the use of the vehicles by various parties. During the operation of the vehicles, the system will collect information regarding utilization, costing and related analytic information.

When the need arises, public transport schedules can also be included in this system. These will be interfaced to the Planned Action that publishes such information on the web.

*Current and On-going Work:*

The Ministry of Infrastructure is carrying out design of the systems.

*Budgetary Estimate:*

Category B (Between US\$200,000 and US\$500,000)

**GOV-2.17: The National Computer Center (NCC)**

Type	Institutional Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> GOV-2.18 The National Data Center
Planned Action Due Date	Fourth quarter of 2010
Planned Action Ownership	RITA
Implementation Agencies	RITA

**Planned Action Details**

*Purpose:*

To establish a National Computer Center that has the responsibility of providing technical support to all Ministries and public institutions.

*Description:*

With the NICI-2010 Plan stressing a variety of governmental ICT projects (both as e-Government or otherwise), there is a need for the various Ministries and institutions to be supported by a capable IT workforce. Such a workforce would assist these parties in the following areas:

- Analysis and specification of requirements
- Identification of training needs and assistance in training planning
- Resolution of technical issues
- Assistance in the development of bidding documents
- Assistance in the development of proper quality control procedures (testing and certification of deliveries)
- Support during development and implementation

The workforce can be set up in a special unit hosted by RITA. The unit can also direct its attention internally and be useful for RITA's various projects.

*Benefits of the Planned Action:*

- Quick resolution of problems

- Standardization of work
- Allows RITA to have an overview of the status of various projects

*Current and On-going Work:*

Establishing testing and training laboratories.

*Risks:*

Private sector is growing very fast and might overtake the NCC's activities.

*Budgetary Estimate:*

Category C (Between US\$500,000 and US\$800,000)

#### GOV-2.18: Establish the National Information Center (NIC)

Type	Development Project
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	<b>This Planned Action is aimed at setting up RITA and other plan implementation-coordinating structures</b>
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> Under RITA law</p> <p><i>Linkages:</i></p> <ul style="list-style-type: none"> <li>GOV-2.11 The Information Decision Support Center</li> <li>GOV-2.17 The National Computer Center</li> </ul>
Time-Bound Target:	Fourth quarter of 2010
Planned Action Due Date	
Planned Action Ownership	RITA
Implementation Agencies	RITA

#### Planned Action Details

*Purpose:*

The National Information Center will be the unit that processes national data. It does not have the responsibility of processing applications for the rest of the Government. However, it will be in the responsible position of collecting national data, analyzing it and disseminating it.

*Description:*

The National Information Center will establish and manage comprehensive links to a wide range of sectoral and national information systems. Its main purpose is the collection and analysis of information at national level.

This mandate requires the NIC will be the processing center for national information. This processing is of information from other Agencies, and from parties other than the NIC. The NIC will not replace the core automation or information-processing systems of the various Ministries, Agencies or private sector organizations. The main functions of the NIC can be implemented through the following policies:

1. NIC would be the repository of national information. As such, it would be in a position to receive the information but not necessarily be at the source of its preparation. Other agencies would be responsible for the development of their own information-processing systems to export data to the NIC.

2. NIC would be the center for processing such information.

3. NIC would be responsible for publishing national information to be disseminated on a regular basis, published openly on the web, or based on ad hoc requests.

4. The NIC will work closely with other research organizations such as the National Statistical Bureau and the Information Decision Support Center.

Being at the heart of the nation's information flow, the NIC can become the proper authority to handle all matters related to data exchange. This is a serious issue in a modern networked society. As and when more database applications are developed, the NIC can review the data dictionaries of each Agency to avoid duplication and to emphasize ownership.

- To provide the nation with on-going national information
- To provide Government with quick access to information that will facilitate decision-making
- To standardize the codification and use of information
- To assist in data-exchange procedures
- To provide useful information to foreign investors (country data and other key indicators)
- To support and promote researchers and scholars

*Risks:*

Resistance to migrating existing applications to the data center.

*Budgetary Estimate:*

Category E (Between US\$1 million and US\$3 million)

#### GOV-2.19: Establish a Management Information System in RITA

Type	Development Project
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	<b>This Planned Action is an aspect of NICI-2005 initiatives aimed at setting up RITA and other plan implementation-coordinating structures</b>
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i> GOV-2.17 The National Computer Center</p>
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	RITA
Implementation Agencies	RITA

#### Planned Action Details

*Purpose:*

Introduce a Management Information System in RITA.

*Description:*

At the start of NICI-2010, there will be many projects to manage. There will be a large number of applications to handle such as cost control, project management and the monitoring and evaluation of various results. It becomes necessary, therefore, for RITA to have its own Management Information System.

A Software Development Unit will develop the MIS and will provide support to other agencies in their projects.

*Budgetary Estimate:*

Category B (Between US\$200,000 and US\$500,000)

GOV-2.20: Automation of Street Names	
Type	Institutional Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> The Government needs to issue the necessary legal decrees that allow such an exercise to be completed quickly</p> <p><i>Linkages:</i> All GIS based Planned Actions</p>
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	Ministry of Local Administration, Community Development and Social Affairs
Implementation Agencies	Ministry of Local Administration, Community Development and Social Affairs

#### Planned Action Details

##### Purpose:

To establish a project that assigns clear and usable street names in all towns and cities in Rwanda.

##### Description:

With various applications relying more and more on GIS, it becomes even more urgent to have a definite system for identifying houses and offices. This Planned Action proposes the launch of a project that establishes a standard for the naming of streets in Rwanda. This would need to start from the proper codification of areas, regions and streets.

In other countries, problems were encountered when different agencies that need street names completed the exercise on their own resulting in multiple nomenclatures. The standardization of the codification by the Ministry of Local Administration, Community Development and Social Affairs would resolve this problem.

From an ICT point of view, such codification should be automated and integrated with other GIS Planned Actions.

##### Benefits of the Planned Action:

- Access to all households and offices by clear addresses
- Integration with other GIS Planned Actions would help such utilities as water, electricity, telephones, etc, to have quick access to their subscribers.

##### Budgetary Estimate:

Category C (Between US\$500,000 and US\$800,000)

#### PLANNED ACTIONS ROLLED OVER FROM NICI-2005 PLAN

##### GOV-1: Initiative to Set Up NICI-2010 Plan Execution and Coordination Structures within Government Ministries, Public Service Organizations and Other Organizations and Establishments Involved in the Implementation of the National Plan

Program Ownership	The relevant Government Ministries and PSOs
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To promote and improve the efficiency and effectiveness of the civil and public service</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To facilitate the execution and coordination of specific components of the NICI-2010 Plan at the level of the various Government Ministries, PSOs and other public and private sector organizations, establishments and entities identified in the Plan as implementation agencies</li> </ul>

##### G1.1

*Plan-Specific Actions:* All Government Ministries, Public Service Organizations (PSOs) and other relevant NICI-2010 Plan implementation agencies, establishments and entities to respectively set up a Plan Execution and Coordination Committee (PECC).

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* All Government Ministries, PSOs and other identified implementation agencies, establishments and entities to complete setting up their respective PECC by early second quarter of 2006.

*Planned Action Implementation Agency:* Relevant Government Ministries, PSOs and other public and private sector entities.

*Status:* Work in progress.



**G1.2**

All Ministries, PSOs and other NICI-2010 Plan Implementation Entities to submit the list of the PECC members to RITA and the ICT Advisor to the President.

*Prerequisites:* The setting up of the PECC by respective Ministries, PSOs and other entities.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* List of members of PECCs to be submitted to RITA and the ICT Advisor to the President by the second quarter of 2006.

*Planned Action Implementation Agency:* Relevant Government Ministries, PSOs and other public and private sector entities.

*Status:* Work in progress.

#### GOV-2: Program to Set Up Information Technology Services Division or Directorate (ITSD) in Government Ministries and Public Service Organizations

Program Ownership	Ministry of Public Service, Skills Development and Labor
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To promote and improve the efficiency and effectiveness of the civil and public service</li> <li>• To modernize the operations of the civil and public service</li> <li>• To facilitate administrative and service delivery cost reduction and the improvement of productivity within the civil and public service</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To set up in each Ministry and Public Service Organization an ITSD to provide an enabling and facilitative infrastructure and environment for supporting the delivery of ICT services to users across the Ministry/PSO. The ITSD will be responsible for delivering a wide range of computing services including: (i) organization-wide computer network access and usage services; (ii) computer-based information system facilities to support the activities and operations of the Directorates and other external entities of the Ministry/PSO; (iii) Intranet and Internet services to all staff of the Ministry/PSO; (iv) training, user support and system maintenance services across the Ministry/PSO; and (v) computer hardware and software identification, sourcing and procurement services to the entire Ministry/PSO</li> <li>• To seamlessly integrate the activities and operations of the Government Ministries and PSOs at the headquarters with those of their respective local functional units and other external divisions and entities at the Prefecture level, via information sharing and interchange, through the deployment and utilization of ICTs.</li> </ul>

**G2.1**

*Plan-Specific Actions:* All Government Ministries and Public Service Organizations (PSOs) to develop their respective ICT Policy Statement on the deployment and exploitation of ICTs to support their organizational activities and operations within the framework of the NICI-2010 Plan.

*Prerequisites:* In formulating its ICT Policy Statement, there is a need for each Ministry or PSO to refer to the provisions of the GOR ICT Policy Document and take into account the Vision for Rwanda (VfR).

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Each Government Ministry and PSO to formulate and make public their respective ICT Policy Statement by the second quarter of 2006. Each Government Ministry and PSO to make available a copy of its ICT Policy Statement to RITA by the second quarter of 2006.

*Planned Action Implementation Agency:* Government Ministries and PSOs.

*Status:* Work in progress.

**G2.4**

*Plan-Specific Actions:* All Government Ministries and PSOs to develop their respective organization specific implementation plan based on their assigned programs and initiatives in the NICI-2010 Plan. *Note:* The IT Plan for each Ministry or PSO will take into account the key organizational activities and operations to be computerized or supported by the deployment and exploitation of ICTs.

*Prerequisites:* The ICT Policy Statement to be developed by each Ministry and PSO.

*Planned Action Linkages:* G2.1

*Time-Bound Measurable Targets:* All Government Ministries and PSOs to develop their respective First Biennial Plan (2006-2007) by the fourth quarter of 2006, the Second Biennial Plan (2008-2009) by the first quarter of 2008, and the Annual Plan (2010) by the fourth quarter of 2009.

*Planned Action Implementation Agency:* Government Ministries and PSOs.

*Status:* Work to start.

**G2.5**

*Plan-Specific Actions:* All Government Ministries and PSOs to develop annual IT budgets (within the time frame of NICI-2010) to implement their respective IT Plans.

*Prerequisites:* The IT Plan of each Ministry or PSO.

*Planned Action Linkages:* G2.4

*Time-Bound Measurable Targets:* All Government Ministries and PSOs, depending on their size and operations, to set aside during the time frame of NICI-2010 5% to 10% of its annual budget as IT budget to cover the purchase of IT products, services and training.

*Planned Action Implementation Agency:* Government Ministries and PSOs in collaboration with the Ministry of Public Service, Skills Development and Labor, and Parliament.

*Status:* Work in progress.



**G2.6**

*Plan-Specific Actions:* Program for organizational process re-engineering of Government Ministries and PSOs to facilitate administrative efficiency and improved service delivery. *Note:* Under this initiative, all Government Ministries and PSOs, before embarking on their computerization process, will be obliged to undertake a comprehensive review of their organizational structures and procedures with a view to exploring the scope for process re-engineering and re-design to facilitate improved administrative efficiency and service delivery.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* All Government Ministries and PSOs to investigate the need to undertake a process re-engineering task before embarking on computerization by the third quarter of 2006.

*Planned Action Implementation Agency:* Government Ministries and PSOs in collaboration with the Ministry of Public Service, Skills Development and Labor.

*Status:* Work to start.

**GOV-3: The Government Computerization Project**

Program Ownership	RITA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To support the administrative and service delivery activities and operations of central and local Government units</li> <li>• To promote and improve the efficiency and effectiveness of the civil and public service</li> <li>• To modernize the operations of the civil and public service</li> <li>• To facilitate administrative and service delivery cost reduction and the improvement in productivity within the civil and public service</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To computerize Government Ministries and PSOs to facilitate efficient administration and service delivery</li> <li>• To install corporate (organizational) computer networks with access to the Internet within each of the Government Ministries and PSOs</li> <li>• To implement applications systems, database and information systems to support the administrative activities and service delivery functions and activities of the Government Ministries and PSOs</li> <li>• To spread the use of the Internet within the Government Ministries and other Public Service Organizations</li> </ul>

**G3.1**

*Plan-Specific Actions:* Government Ministries and PSOs to commission an Organization-wide Corporate Network Implementation Report.

*Prerequisites:* The IT Plan of each Ministry or PSO.

*Planned Action Linkages:* G2.4

*Time-Bound Measurable Targets:* Each Government Ministry and PSOs to commission and complete its Organization-wide Corporate Network Implementation Report by the third quarter of 2006.

*Planned Action Implementation Agency:* Government Ministries and PSOs in collaboration with the Ministry of Public Service, Skills Development and Labor.

*Status:* Work in progress.

**G3.2**

*Plan-Specific Actions:* Each Government Ministry and PSO to implement a flexible organization-wide corporate network.

*Prerequisites:* The Organization-wide Corporate Network Implementation Report of each Ministry or PSO.

**Planned Action Linkages:** G3.1, G3.4

*Time-Bound Measurable Targets:* Fast track Government Ministries and PSOs to implement their corporate network (at least at the organizational headquarters) by 2007.

*Planned Action Implementation Agency:* Government Ministries and PSOs.

*Status:* Work in progress.

**G3.3**

*Plan-Specific Actions:* Each Government Ministry or PSO to identify and develop, for its own specific use, relevant computer-based applications, information and database systems to support its administrative and service delivery activities. Key applications include the following:

- (i) Directorate-specific computer-based applications and information systems (for use by specific Directorates of the Ministry or PSO), for example Management Information System (MIS), personnel/human resource management system, accounting and budgetary system and payroll system as in the case of the Administration and Finance Directorate;
- (ii) Shared applications and information systems including software, information and database systems that will be used by two or more Directorates or divisions;
- (iii) Organization-wide standard application systems such as standard applications and Internet-based applications;
- (iv) Special database and information systems for supporting specific functions or areas of operation of the organization as well as its functional local and external divisions or entities;
- (v) All other relevant computer-based applications that will be identified for implementation from time to time.

*Prerequisites:* The IT Plan of each Ministry or PSO and the Organization-wide Corporate Network Implementation Report of each Ministry or PSO.

*Planned Action Linkages:* G2.4, G3.1, CMN-4, CMN-5

*Time-Bound Measurable Targets:* Government Ministries and PSOs to implement their mission-critical computer-based applications, information and database systems by the fourth quarter of 2007. Government Ministries and PSOs will be expected to implement their non-critical computer-based applications, information and database systems by 2008.

*Planned Action Implementation Agency:* Government Ministries and PSOs with technical support from RITA.

*Status:* Work in progress.

**G3.4**

*Plan-Specific Actions:* Each Government Ministry or PSO to connect their corporate network to GovNet.

*Prerequisites:* The IT Plan of each Ministry or PSO and the Organization-wide Corporate Network Implementation Report of each Ministry or PSO.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Government Ministries and PSOs to connect their corporate network to GovNet by 2007.

*Planned Action Implementation Agency:* Government Ministries and PSOs with technical support from RITA.

*Status:* Work in progress.

**G3.5**

*Plan-Specific Actions:* Each Government Ministry or PSO to spread access to the Internet within their organization.

*Prerequisites:* The IT Plan of each Ministry or PSO and the Organization-wide Corporate Network Implementation Report of each Ministry or PSO.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* All Government Ministries and PSOs to spread access to the Internet within their respective establishments by 2007.

*Planned Action Implementation Agency:* Government Ministries and PSOs with technical support from RITA.

*Status:* Work in progress.

<b>GOV-4: GovNet – the Government Intranet Project</b>	
Implementation Details Requirements	A GovNet Project Implementation Report will have to be put together detailing how the project will be implemented and funded
Program Ownership	RITA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To bring Government closer to the people</li> <li>• To facilitate the implementation of the Government decentralization policy</li> <li>• To support the administrative and service delivery activities and operations of central and local Government units</li> <li>• To promote and improve the efficiency and effectiveness of the civil and public service</li> <li>• To modernize the operations of the civil and public service</li> <li>• To facilitate administrative and service delivery cost reduction and the improvement of productivity within the civil and public service</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To inter-network all the Government Ministries and PSOs via their organizational network into GovNet, the Wide Area Network (Intranet) of Government</li> <li>• To provide a common Internet gateway for all Government Ministries via GovNet</li> <li>• To facilitate civil and public service-wide information access, interchange and exchange via GovNet</li> </ul>

#### G4.1

*Plan-Specific Actions:* Commission a Project Report for the implementation of GovNet. *Note:* GovNet is to serve as the Government-wide area network linking all Government Ministries and PSOs as well as providing a common gateway to the Internet. It is proposed that GovNet also serve as the Government-wide Intranet and that it should be linked to the proposed Rwanda Academic Research Network (RARN) in the future.

*Prerequisites:* The GovNet Project Implementation Report will document, among other things, details of: (i) need and user requirement assessment; (ii) systems requirements and configuration; (iii) project implementation, scheduling and phasing; and (v) costing and funding issues.

*Planned Action Linkages:* E8.7, CMN-1, C3.1, C3.4, G8.3

*Time-Bound Measurable Targets:* Commission and complete the GovNet Project Implementation Report by the fourth quarter of 2006.

*Planned Action Implementation Agency:* Ministry of Public Service, Skills Development and Labor.

*Status:* Work in progress.

#### G4.2

*Plan-Specific Actions:* Implement the nodes of GovNet.

*Prerequisites:* The GovNet Project Implementation Report.

*Planned Action Linkages:* G3.4

*Time-Bound Measurable Targets:* Implement the core system of GovNet by 2007.

*Planned Action Implementation Agency:* Government Ministries and PSOs in collaboration with RITA.

*Status:* Work in progress.

#### G4.3

*Plan-Specific Actions:* Implement the GovNet common Internet gateway.

*Prerequisites:* The GovNet Project Implementation Report.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Implement the GovNet Internet gateway by 2007.

*Planned Action Implementation Agency:* Ministry of Public Service, Skills Development and Labor with technical support from RITA.

*Status:* Work in progress.

#### G4.4

*Plan-Specific Actions:* Implement suitable application systems to facilitate information access, interchange and exchange over GovNet within the civil and public service.

*Prerequisites:* The GovNet Project Implementation Report.

*Planned Action Linkages:* None

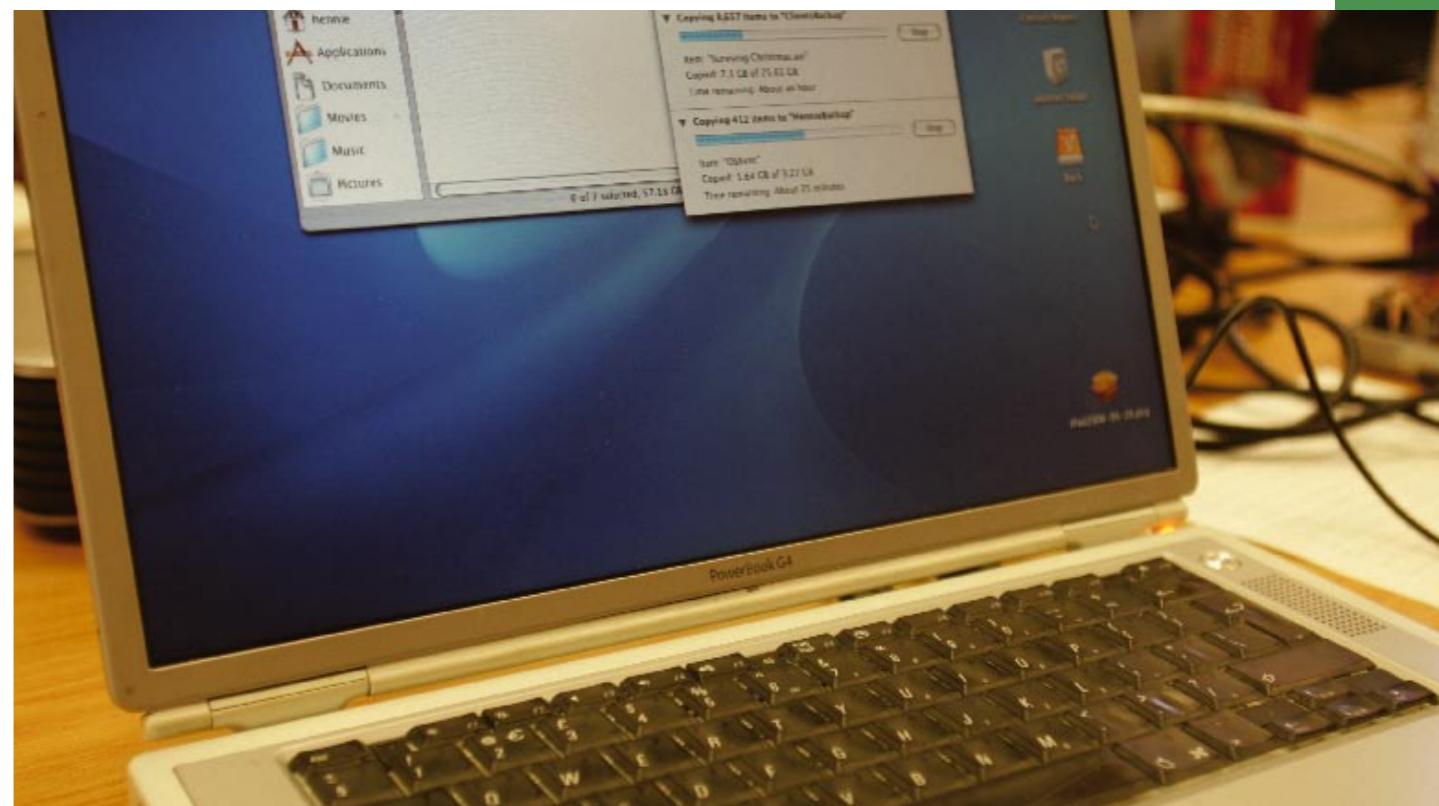
*Time-Bound Measurable Targets:* Information interchange and exchange application system to be implemented on GovNet by 2008.

*Planned Action Implementation Agency:* Ministry of Public Service, Skills Development and Labor with technical support from RITA.

*Status:* Work to start.

#### GOV-5: The GOR Web-Presence Development Project

Program Ownership	Office of the President
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To bring Government closer to the people</li> <li>• To facilitate Government decentralization policy</li> <li>• To support the administrative and service delivery activities and operations of central and local Government units</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To develop and maintain the GOR website on the Internet with links to existing and new websites of Government Ministries and other relevant organizations</li> <li>• To encourage all Government Ministries and other PSOs to develop a presence on the Internet through the creation of their organizational websites</li> <li>• To provide information on Rwanda via the web to Rwandans in and outside the country and to the international community</li> <li>• To use the Internet as a vehicle to project a better image of Rwanda to the outside world</li> </ul>



**G5.3**

**Plan-Specific Actions:** Each Government Ministry and Public Service Organization website to be linked to the GOR official website.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Each Government Ministry and Public Service Organization website to be linked to the GOR official website by the fourth quarter of 2006.

**Planned Action Implementation Agency:** Government Ministries and Public Sector Organizations.

**Status:** Work in progress.

**GOV-6: National Geographic Information System (GIS) Applications Project**

Program Ownership	The National Geographic Data Committee (NGDC) on behalf of RITA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To bring Government closer to the people</li> <li>• To facilitate Government decentralization and villagization policy</li> <li>• To support the administrative and service delivery activities and operations of central and local Government units</li> <li>• To promote and improve the efficiency and effectiveness of the civil and public service</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To develop, enhance and strengthen the GIS capability, a number of Government Ministries and PSOs</li> <li>• To promote and demonstrate the use of GIS to support administrative services, decision making and service delivery in the civil and public service</li> <li>• To set up a national task force on GIS as one of the permanent working groups of the RITA</li> </ul>

**G6.1**

**Plan-Specific Actions:** The RITA to set up the National Geographic Data Committee (NGDC) as one of its permanent working groups to oversee and advise on the implementation of GIS to support Government administration and service delivery in relevant Ministries.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** RITA to set up the NGDC by 2007.

**Planned Action Implementation Agency:** RITA

**Status:** Work to start.

**G6.2**

**Plan-Specific Actions:** Ministry of Infrastructures to implement suitable GIS applications under the auspices of the National GIS Project to support its administrative and service delivery services. Ministry of Lands, Resettlement and Environmental Protection, Ministry of Health, Ministry of Local Government, Good Governance, Community Development and Social Affairs, Ministry of Energy, Water and Natural Resources, and Ministry of Agriculture, Animal Resources and Forestry to implement suitable GIS applications under the auspices of the National GIS Project to support their administrative and service delivery services. Other relevant Ministries and Public Sector Organizations to implement suitable GIS applications under the auspices of the National GIS Project to support their respective administrative and service delivery services.

**Prerequisites:** The setting up of the National Geographic Data Committee (NGDC).

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Relevant Ministries to implement their component of the National GIS Project and implement 50% of their relevant GIS applications by 2008. Relevant Ministries to implement 100% of their GIS applications by 2009.

**Planned Action Implementation Agency:** Relevant project implementation. Government Ministries with technical support from RITA.

**Status:** Work in progress.

**GOV-7: Special Government ICT Initiatives**

Program Ownership	The Relevant Government Ministries, departments, establishments and PSOs
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To bring Government closer to the people</li> <li>• To support the administrative and service delivery activities and operations of central and local Government units</li> <li>• To promote and improve the efficiency and effectiveness of the civil and public service</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To develop and implement special ICT systems and applications to support the activities and operations of specific Government agencies</li> </ul>

**G7.1**

**Plan-Specific Actions:** The Local Government Computer Bureau (LGCB) Initiative. *Note:* This initiative is designed to facilitate the setting up of a Local Government Computer Bureau (LGCB) to provide computing services (on contract basis) to local Government administrations in all Prefectures.

**Prerequisites:** A detailed report documenting how the LGCB is to be set up and operated. *Note:* This report, among other things, will recommend the most appropriate set-up structure for the LGCB. The possibility of the LGCB being a unit within RITA can also be considered.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Ministry of Local Government, Good Governance, Community Development and Social Affairs to commission and complete the report on setting up the LGCB by the fourth quarter of 2006. Set up the LGCB by 2007.

**Planned Action Implementation Agency:** Ministry of Local Government, Good Governance, Community Development and Social Affairs.

**Status:** Work to start.

**G7.2**

**Plan-Specific Actions:** Roads Records Information System (RORIS). *Note:* RORIS will link to the Ministry's Geographic Information System (GIS) to be developed and will serve as a national database system on the road network system in Rwanda. Details of the status of each section of the road network (urban, rural and feeder roads) will be held in RORIS and this information will be updateable.

**Prerequisites:** (i) A Comprehensive Project Report for RORIS covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Infrastructure.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Commission and complete the RORIS Project Implementation Report by the second quarter of 2007. Implement RORIS by 2008.

**Planned Action Implementation Agency:** Ministry of Infrastructure.

**Status:** Work to start.

**G7.3**

**Plan-Specific Actions:** Military Personnel Information System (MIPIS). *Note:* MIPIS is to serve as a centralized personnel database system on military personnel including serving, retired and demobilized military personnel. Access to MIPIS will be confidential to the Ministry of Defense and National Security and it will provide details relating to various units of the Armed Forces to facilitate administration and rapid resource (personnel, equipment and other resources) mobilization deployment, allocation and reallocation.

**Prerequisites:** (i) A comprehensive Project Report for MIPIS covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Defense.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Commission and complete the MIPIS Project Implementation Report by the second quarter of 2007. Implement MIPIS by 2008.

*Planned Action Implementation Agency:* Ministry of Defense.

*Status:* Work to start.

#### G7.4

*Plan-Specific Actions:* The National Identity (ID) Card System Computerization Project. *Note:* The objective of this Project is to computerize the National Identity Card (ID) Provision and Administration System. The system is to be implemented by the ITSD of the Ministry of Local Government, Good Governance, Community Development and Social Affairs. The aim is to eventually develop a unique ID system to support the issuing of smart ID cards to serve as a single computer-readable multipurpose card that, apart from serving as an ID card, can be used to interact with Government services, make payments, vote electronically, obtain passports, driving licenses, etc.

*Prerequisites:* (i) National ID Card System Computerization Project Report. (ii) The setting up of the ITSD of the Ministry of Local Government, Good Governance, Community Development and Social Affairs.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Project to computerize the National ID Card System to commence by the third quarter of 2006.

*Planned Action Implementation Agency:* Ministry of Local Government, Good Governance, Community Development and Social Affairs.

*Status:* Work in progress.

#### G7.5

*Plan-Specific Actions:* The National Driving License and Vehicle Licensing and Registration Computerization Project. *Note:* This project is to computerize the driving license, vehicle licensing and registration system of Rwanda. The project will also target the administrative and operational activities associated with these licensing and registration processes.

*Prerequisites:* The National Driving License and Vehicle Licensing and Registration Computerization Project Report.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Infrastructure to Commission and complete a Project Report by the fourth quarter of 2006. Project to computerize the Driving License, Vehicle Licensing and Registration System of Rwanda to be commenced by 2007.

*Planned Action Implementation Agency:* Ministry of Infrastructure in collaboration with other relevant Government agencies.

*Status:* Work to start.

#### G7.6

*Plan-Specific Actions:* Initiative to computerize key operations and support services of the National Police Force. *Note:* This initiative is designed to facilitate the process of identifying and computerizing key operations and support services of the National Police Force.

*Prerequisites:* (i) A detailed report on the computerization of key operations and support services of the National Police Force. (ii) The setting up of the ITSD of the National Police Service.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Commission and complete report on computerizing key operations and support services of the National Police Force by the fourth quarter of 2006. Start computerizing key operations and support services of the National Police Force by 2007.

*Planned Action Implementation Agency:* Ministry of Internal Affairs and the Rwandan National Police Service.

*Status:* Work in progress.

#### G7.7

*Plan-Specific Actions:* Program to computerize key operations and support services of the Rwandan Criminal Justice System. *Note:* This program is designed to facilitate the process of identifying and computerizing key operations and support services of the Rwandan Criminal Justice System.

*Prerequisites:* A detailed report on the computerization of key operations of the Rwandan Criminal Justice System.

*Planned Action Linkages:* C4.1

*Time-Bound Measurable Targets:* Ministry of Justice to commission and complete report on computerizing key operations of the Rwandan Criminal Justice System by the fourth quarter of 2006. Start computerizing key operations of the Rwandan Criminal Justice System by 2007.

*Planned Action Implementation Agency:* Ministry of Justice and Institutional Relations.

*Status:* Work in progress.

#### GOV-8: The Smart Government Initiative (SGI)

Program Ownership	Smart Government Initiative (SGI) Committee, on behalf of RITA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To bring Government closer to the people</li> <li>• To support the administrative and service delivery activities and operations of central and local Government units</li> <li>• To promote and improve the efficiency and effectiveness of the civil and public service</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To promote effective governance and efficient delivery of Government services</li> <li>• To facilitate public access to on-line information on ranges of topics of interest to the public at large</li> <li>• To promote Government and private sector partnership to facilitate the delivery of specific services to Government and public institutions as well as to the public at large</li> </ul>

#### G8.1

*Plan-Specific Actions:* The Cabinet to set up the Smart Government Initiative (SGI) Committee as one of its permanent working groups to oversee and advise on the implementation of the SGI.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Cabinet to set up the SGI Committee by the fourth quarter of 2006.

*Planned Action Implementation Agency:* The Cabinet.

*Status:* Work to start.

#### G8.2

*Plan-Specific Actions:* Government Electronic Procurement and Settlement System (GEPSS). *Note:* The GEPSS Project is designed to set up a centralized electronic system to facilitate the tendering, procurement and settlement of goods and services on-line to eliminate the need for duplicate systems operating in various Government Ministries and agencies. The GEPSS, once set up, will play a key role in the future in the development of business-to-Government (B2G) e-Commerce in Rwanda.

*Prerequisites:* (i) The setting up of the SGI Committee. (ii) The GEPSS Project Implementation Report.

*Planned Action Linkages:* P5.2

*Time-Bound Measurable Targets:* Commission and complete the GEPSS Project Implementation Report by the fourth quarter of 2006. Implement a fully operational Government Electronic Procurement and Settlement System (GEPSS) by 2008.

*Planned Action Implementation Agency:* The Relevant Government Ministry or Agency in collaboration with the Smart Government Initiative (SGI) Committee.

*Status:* Work to start.

**G8.3**

*Plan-Specific Actions:* The Public Information Kiosks (PIKs) Initiative. *Note:* This SGI initiative is designed to set up public electronic information access kiosks to serve as public access points for information on a range of subjects of interest to the public.

*Prerequisites:* (i) The setting up of the SGI Committee. (ii) The PIK Initiative Implementation Report.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Commission and complete the PIK Initiative Implementation Report by the second quarter of 2007. Begin the implementation of the PIK Initiative by the fourth quarter of 2007.

*Planned Action Implementation Agency:* The relevant Government Ministry or Agency in collaboration with the Smart Government Initiative (SGI) Committee.

*Status:* Work to start.

**G8.4**

*Plan-Specific Actions:* The Smart Government Initiative (SGI)/Private Sector Partnership Program. *Note:* This program will be aimed at involving the private sector in the provision and delivery of Government services to Government institutions and to the public at large. The objective is not to privatize the provision of the relevant Government services, but rather to cut down on Government expenditure in the provision and delivery of these services, by partnering with private sector organizations and businesses. The partnered private sector organizations and business will be responsible for meeting the investment and operational cost for the development, provision and delivery of the services, and recover their cost over time by charging users a service fee.

*Prerequisites:* (i) The setting up of the SGI Committee. (ii) The SGI/Private Sector Partnership Report. *Note:* This report will document details of how this Government/Private Sector partnership will be implemented.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Commission and complete the SGI/Private Sector Partnership Report by the second quarter of 2007. Begin pilot implementation of the SGI/Private Sector Partnership Program by 2008.

*Planned Action Implementation Agency:* The relevant Government Ministry or Agency in collaboration with the Smart Government Initiative (SGI) Committee.

*Status:* Work to start.

**GOV-9: Developing Robust, Flexible and Scalable Architecture for Supporting Across-the-Board Enforcement of Standards, Application System Integration and Sharing Across Ministries and PSOs, Inter-operability of Systems, and where Appropriate, Providing a Flexible Common View of Systems Operating Across a Number of Ministries and PSOs**

Program Ownership	RITA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To bring Government closer to the people</li> <li>• To support the administrative and service delivery activities and operations of local Government units</li> <li>• To modernize the operations of the civil and public service</li> <li>• To facilitate administrative and service delivery cost reduction and the improvement in productivity within the civil and public service</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To develop specific architectures and technical standards and guidelines for supporting the roll-out of e-Government back office, front office and other systems</li> </ul>

**G9.1**

*Plan-Specific Actions:* Implement an initiative to develop a high level Enterprise Information Architecture (EISA). EISA to integrate work processes and information flows with technology to achieve the strategic objectives of each Ministry and PSO. EISA should promote and support inter-operability, open systems, end-user satisfaction and prudent technology investment and best practices.

*Prerequisites:* Comprehensive e-Government implementation strategy for Rwanda.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* RITA to implement this initiative by the fourth quarter of 2006.

*Planned Action Implementation Agency:* RITA

*Status:* Work to start.

**G9.2**

*Plan-Specific Actions:* Implement an initiative to define the Government's e-Government Inter-operability Technical Framework (ITF). The ITF is to define policies and specifications for governing information flow across Government agencies as well as setting core standards for data and information integration and management. The ITF should also set out policies for establishing and implementing e-Government Metadata Standard across the public sector.

*Prerequisites:* Comprehensive e-Government implementation strategy for Rwanda.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* RITA to implement this initiative by the second quarter of 2007.

*Planned Action Implementation Agency:* RITA

*Status:* Work to start.

**G9.3**

*Plan-Specific Actions:* OE-3: Implement an initiative to develop a series of technical specifications, guidelines and frameworks to guide and address a number of e-Government system roll-out legal, regulatory and technical standards and issues. A number of these will be developed during Phase 2.

*Prerequisites:* Comprehensive e-Government implementation strategy for Rwanda.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* RITA to implement this initiative within the time frame of NICI-2010 but the critical guidelines, frameworks and technical specifications for initiating and rolling out e-Government should be completed by 2007.

*Planned Action Implementation Agency:* RITA

*Status:* Work to start.

**G9.4**

*Plan-Specific Actions:* Implement an initiative to develop guidelines and standards for developing and rolling out agency-specific and cross-agency BOSSs and PISAs to ensure system inter-operability, and where appropriate, system-level integration and the sharing and exchange of data and applications across the systems.

*Prerequisites:* Comprehensive e-Government implementation strategy for Rwanda.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* RITA to develop these guidelines and standards by the second quarter of 2007.

*Planned Action Implementation Agency:* RITA

*Status:* Work to start.

**G9.5**

*Plan-Specific Actions:* Develop technical standards for setting requirements for the verification of the identity of individuals and organizations during on-line G2C, G2B and G2C e-Government transactions and interactions.

*Prerequisites:* Comprehensive e-Government implementation strategy for Rwanda.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* RITA to develop these technical standards by the second quarter of 2007.

*Planned Action Implementation Agency:* RITA

*Status:* Work to start.

**G9.6**

*Plan-Specific Actions:* Develop a technical briefing document defining technical requirements for assessing threats and vulnerabilities to e-Government security systems and the taking of countermeasures for each security objective.

*Prerequisites:* Comprehensive e-Government implementation strategy for Rwanda.

*Planned Action Linkages:* None

**Time-Bound Measurable Targets:** RITA to develop this technical briefing document by initiative by the second quarter of 2007.

**Planned Action Implementation Agency:** RITA

**Status:** Work to start.

#### G9.7

**Plan-Specific Actions:** Implement an initiative to develop guidelines for facilitating the registration and authentication of citizens and business organizations subscribing for e-Government services.

**Prerequisites:** Comprehensive e-Government implementation strategy for Rwanda.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** RITA to develop these guidelines and standards by initiative by the fourth quarter of 2007.

**Planned Action Implementation Agency:** RITA

**Status:** Work to start.

#### G9.8

**Plan-Specific Actions:** Implement an initiative to develop a technical manual that defines functional security requirements appropriate for the delivery of services by and on behalf of Government agencies.

**Prerequisites:** Comprehensive e-Government implementation strategy for Rwanda.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** RITA to develop this technical manual by the second quarter of 2007.

**Planned Action Implementation Agency:** RITA

**Status:** Work to start.

#### G9.9

**Plan-Specific Actions:** Implement an initiative to develop a technical briefing document for ensuring the confidentiality of electronic transactions carried out by or on behalf of Government agencies where there is a need for confidentiality.

**Prerequisites:** Comprehensive e-Government implementation strategy for Rwanda.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** RITA to develop this technical briefing document by the second quarter of 2007.

**Planned Action Implementation Agency:** RITA

**Status:** Work to start.

#### G9.10

**Plan-Specific Actions:** Implement an initiative to develop a technical manual on ensuring the protection of e-Government service-provision domain against outside malicious electronic attack and non-malicious failures.

**Prerequisites:** Comprehensive e-Government implementation strategy for Rwanda.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** RITA to develop this technical manual by the second quarter of 2007.

**Planned Action Implementation Agency:** RITA

**Status:** Work to start.

#### G9.11

**Plan-Specific Actions:** Implement an initiative to develop guidelines on open standard and open source application system procurement and standards.

**Prerequisites:** Comprehensive e-Government implementation strategy for Rwanda.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** RITA to develop these guidelines by the fourth quarter of 2006.

**Planned Action Implementation Agency:** RITA

**Status:** Work to start.

#### CMN-3: Special Initiatives to Facilitate the Rapid Deployment and Exploitation of ICTs in the Community

Program Ownership	The relevant implementation agencies
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To bring Government closer to the people</li> <li>• To facilitate Government decentralization and villagization policy</li> <li>• To support the administrative and service delivery activities and operations of local Government units</li> <li>• To modernize the operations of the civil and public service</li> <li>• To facilitate administrative and service delivery cost reduction and the improvement in productivity within the civil and public service</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To implement community-based ICT initiatives to speed up the process of deployment and utilization of ICT-based systems within the community</li> </ul>

#### C1.3

**Plan-Specific Actions:** Initiative to set up Public Data Processing Centers (PDPCs). **Note:** The PDPCs will be set up to provide computing services to SMEs, self-employed local business people, and individuals without their own computer systems. They will also serve as Business Service Centers to provide secretarial, offices address services and computer services to the business community, especially those operating in the service sector. These centers will be set up as private initiatives with some support from the Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives to facilitate the setting up of pilot PDPCs with private sector involvement by 2008.

**Planned Action Implementation Agency:** Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives, and the private sector.

**Status:** Work to start.

#### C3.2

**Plan-Specific Actions:** Special schemes to promote PC penetration into the community.

**Note:** These schemes will be targeted at implementing a number of special initiatives by Government, the private sector and other stakeholders to facilitate, among other things, the lowering of the cost of PCs, the promotion of easy-installment payment schemes, the provision of bank loans to qualified individuals and organizations for the purchase of PCs, computer donations by computer companies and other businesses to schools, hospitals and community-based organizations, bulk donations of used and new computers by donor agencies and international organizations, the arrangement of large-volume bargain price imports of PCs, multi-lateral funding arrangements, etc.

**Prerequisites:** None

**Planned Action Linkages:** E1.3, E1.4, H4.1, H4.2

**Time-Bound Measurable Targets:** Ministry of Finance and Economic Planning in collaboration with other agencies and interested stakeholders to launch schemes to promote PC penetration within the community by the second quarter of 2007.

**Planned Action Implementation Agency:** Ministry of Finance and Economic Planning, the private sector, the local commercial banks and international donor agencies.

**Status:** Work to start.

#### C3.3

**Plan-Specific Actions:** National Electronic Libraries and Archive (NELA). **Note:** The NELA Project comprises two initiatives, namely the Rwandan Electronic Library Initiative (RELI) and the National Electronic Archive Project (NEAP). Both initiatives will be implemented under the auspices of the National Library Board. The National Electronic Archive Project (NEAP) is aimed at setting up a National Archive System for Rwanda and computerizing the entire context of the archive on an on-going basis.

**Prerequisites:** None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The National Library Board to launch the NELA project by the fourth quarter of 2006. Implement RELI and set up a pilot NeL in Kigali by 2003, and several pilot ReLs by 2007. Set up and make operational NeL, as well as a number of ReLs by the fourth quarter of 2008. Implement NEAP on a pilot basis by 2008. The National Archive Holdings to be fully computerized by 2010.

*Planned Action Implementation Agency:* The National Library Board in collaboration with the Ministry of Education.

*Status:* Work to start.

#### C3.4

*Plan-Specific Actions:* Program to set up Community Electronic Information Kiosks (CEIKs). *Note:* The CEIKs are to be set up by the Government Information Service to serve as a one-stop shop for on-line access to information on local and central Government services and community-based information and announcements. These community-based, on-line information centers will be a single point of contact for people. They will provide information on Government services and serve as an electronic information center for community announcements. They will also be a local electronic bulletin board for local businesses to advertise their services and products. Local community-based organizations and schools will announce their activities and inform the public through these centers.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* RITA, in collaboration with relevant Government agencies, to launch program to set up the CEIKs by 2007. A target of establishing at least ten CEIKs in urban Prefectures and about five in rural Prefectures to be achieved by 2008.

*Planned Action Implementation Agency:* RITA in collaboration with relevant Government agencies.

*Status:* Work to start.

#### C3.5

*Plan-Specific Actions:* The Pay-Your-Bills On-line System (PYBOS). *Note:* This initiative is aimed at setting up a National Electronic Payment System to serve as an on-line facility to enable people to pay their utility bills on-line. This system is to be set up by the National Utilities in partnership with the private sector to provide a “one-stop-point” for the payment of bills like electricity bills, telephone bills, water bills, etc.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The National Utilities to initiate a project to implement and make PYBOS operational by 2007.

*Planned Action Implementation Agency:* The National Utilities.

*Status:* Work to start.

#### C3.6

*Plan-Specific Actions:* The Pay Your Tax On-line System (PYTOS). *Note:* The “Pay Your Tax On-line” system is to be set up by the Rwanda Revenue Authority to facilitate on-line payment of taxes and the completion of tax returns by individuals (income tax, property tax, road tax, etc), institutions and corporate entities (corporations, VAT and other business-related taxes). Like the Pay-Your-Bills On-line System (PYBOS), public access to the PYTOS – which is to be linked to the Rwanda Revenue Authority database system – will be via counters, kiosks or ATMs installed at public places like post offices, libraries, Telecenters, Public Information Kiosks (PIKs), hotels, banks, etc.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The Rwanda Revenue Authority to PYTOS by 2007.

*Planned Action Implementation Agency:* Rwanda Revenue Authority.

*Status:* Work to start.

#### CMN-4: Computer-based Information System Implementation Initiatives targeted at the Delivery of Community-based Government Services: Phase 1 Projects

Program Ownership	The relevant Government Ministries and PSOs
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To bring Government closer to the people</li> <li>• To support the administrative and service delivery activities and operations of local Government units</li> <li>• To modernize the operations of the civil and public service</li> <li>• To facilitate administrative and service delivery cost reduction and the improvement in productivity within the civil and public service</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To develop specific computerized database and information systems with public interface components to support community-based services and information delivery services by Government Ministries and PSOs</li> </ul>

#### C4.1

*Plan-Specific Actions:* Criminal Justice Information and System (CRIJIS). *Note:* CRIJIS is to serve as a comprehensive computer-based information and database system on all aspects relating to the administration, operations and activities of the Criminal Justice and Legal System of Rwanda. CRIJIS will host, among other things, electronic documentation of the details relating to the Rwandan legal system, the administration of justice, the operations of the Courts including the cases, records, proceedings, charges, verdicts, sentences and the people involved, the prosecution and defense team, the plaintiffs and defendants, etc. CRIJIS will have a public interface component to facilitate access to the non-confidential information sections of the system, which is of public interest. Access will be via GovNet nodes and other public access points and centers such as Telecenters, Public Information Kiosks (PIKs), etc.

*Prerequisites:* (i) The CRIJIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Justice and Institutional Relations.

*Planned Action Linkages:* G7.6, G7.7

*Time-Bound Measurable Targets:* Ministry of Justice and Institutional Relations to commission and complete the CRIJIS Project Implementation Report by the fourth quarter of 2006. Commence implementation of CRIJIS by 2008.

*Planned Action Implementation Agency:* Ministry of Justice and Institutional Relations.

*Status:* Work to start.

#### C4.2

*Plan-Specific Actions:* Parliamentary Database and Information System (PADIS) *Note:* PADIS is to be a publicly accessible computerized database and information system on key aspects of the Parliament including: details and profile of Parliamentarians, the Officers of the Parliament, the Committees of Parliament and their membership, laws enacted by Parliament, the on-going deliberations of Parliament among others.

*Prerequisites:* (i) The PADIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Parliament.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The Parliament to commission and complete the PADIS Project Implementation Report by the fourth quarter of 2006. Commence implementation of PADIS by 2007.

*Planned Action Implementation Agency:* The Parliament.

*Status:* Work to start.

#### C4.3

*Plan-Specific Actions:* Cabinet Decision Information System (CADIS). *Note:* CADIS will be developed, maintained and supported by the ITSD of the Office of the President and will serve as a database and information system on all aspects of Cabinet decisions. Key information and details to be held in CADIS in relation to each Cabinet decision will include the background to Cabinet decisions, documentation relating to Cabinet decisions, when information relating to Cabinet decisions were first tabled and by which Ministry or Agency, when the decision

was actually taken and how long it took from the date it was tabled at Cabinet, the exact contents of the Cabinet decisions, who is to act on the decision, when the decision is to be effected, its confidentiality status, and so on.

**Prerequisites:** (i) The CADIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Office of the President.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** The Office of the President to commission and complete the CADIS Project Implementation Report by the fourth quarter of 2006. Commence implementation of CADIS by 2007.

**Planned Action Implementation Agency:** The Office of the President.

**Status:** Work to start.

#### C4.4

**Plan-Specific Actions:** Social Services Information System (SOSIS). *Note:* SOSIS will serve as a computerized database and information system with a number of components, some of which will be publicly accessible at community level. SOSIS will host all relevant social welfare system administration information as it relates to: (i) the social welfare services (e.g. type [education, poverty alleviation, orphan support, emergency relief, accommodation, etc], kind, scope, coverage, cost, duration, etc); and (ii) recipient-related information (e.g. type and profile of recipient, qualification and entitlements, gender and age, as well as the coverage, type, quantity and amount of benefits or services received or to be received by the recipient and for how long, etc). SOSIS will also serve as the national database on key social indicators.

**Prerequisites:** (i) The SOSIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Local Government, Good Governance, Community Development and Social Affairs.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** The Ministry of Local Government, Good Governance, Community Development and Social Affairs to commission and complete the SOSIS Project Implementation Report by the fourth quarter of 2006. Commence implementation of SOSIS by 2007.

**Planned Action Implementation Agency:** Ministry of Local Government, Good Governance, Community Development and Social Affairs.

**Status:** Work to start.

#### C4.5

**Plan-Specific Actions:** The Rwandan Tax Administration and Information System (R-TAIS). *Note:* R-TAIS is to serve as a comprehensive integrated computerized database and information system with specific components to support and facilitate the administration of the tax system and also for interfacing with taxpayers (at community-level) to facilitate the process of meeting their tax obligations to the State. Key components of R-TAIS will include the Tax Administration System (TAS), the Income Tax Information System (ITIS), the Custom and Excise Information System (CEIS), and the Corporate Tax Information System (CTIS). R-TAIS is to have an interface to facilitate on-line transactions and information requests as well as for the completion of tax returns.

**Prerequisites:** (i) The R-TAIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Rwanda Revenue Authority.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** The Rwanda Revenue Authority to commission and complete the R-TAIS Project Implementation Report by the fourth quarter of 2006. Commence implementation of R-TAIS by 2007.

**Planned Action Implementation Agency:** The Rwanda Revenue Authority.

**Status:** Work to start.

#### C4.6

**Plan-Specific Actions:** Tourism Promotion Information System (TPIS). *Note:* TPIS is to provide public access to tourism information, including details of tourist spots, game parks, hotels and lodges in various parts of the country, health information, travel information (air, road and lake), and other information that will be required to promote and facilitate tourism in Rwanda. TPIS is to be accessed on-line throughout the country at airports, hotels, tourist centers, etc. The information on TPIS will also be available on the web via the Virtual Tourism Promotion and Facilitation website to be set up by ORTPN (as per F4.6).

**Prerequisites:** (i) The TPIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the ORTPN.

**Planned Action Linkages:** F4.6

**Time-Bound Measurable Targets:** ORTPN is to commission and complete the TPIS Project Implementation Report by the fourth quarter of 2006. Implement TPIS by 2007.

**Planned Action Implementation Agency:** ORTPN

**Status:** Work to start.

#### C4.7

**Plan-Specific Actions:** The National Health Information System (NAHIS). *Note:* NAHIS is to serve as a national database system holding information on health care delivery and administration, epidemics, hygiene, HIV/AIDS prevention and other key health indicators and parameters. The NAHIS will have the following integrated components: (i) the Health System Administration Information to be accessed only by the Ministry of Health; (ii) the Hospital Information System to be accessed by the Ministry of Health, hospitals and community health centers; (iii) the National Drug Database to be accessed by the Ministry of Health, hospitals and community health centers; and (iv) the Public Access Health Information System which the public can access for information on the Health Delivery System.

**Prerequisites:** (i) The NAHIS Project Report covering implementation details and plans, and the cost of the system. (ii) The CADIS Project Report covering implementation details and plans, and the cost of the system. (iii) The setting up of the ITSD of the Ministry of Health.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** The Ministry of Health to commission and complete the NAHIS Project Implementation Report by the fourth quarter of 2006. Commence implementation of NAHIS by 2007.

**Planned Action Implementation Agency:** Ministry of Health.

**Status:** Work to start.

#### C4.8

**Plan-Specific Actions:** National Nutritional Surveillance Information System (NANSIS). *Note:* NANSIS is to be developed, maintained and supported by the ITSD of the Ministry of Health to serve as a comprehensive information system to support nutritional surveillance and monitoring activities in the country. NAHIS will host both nutritional surveillance administrative information as well as statistical details relating to nutritional surveys and impact studies.

**Prerequisites:** (i) The NANSIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Health.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** The Ministry of Health to commission and complete the NANSIS Project Implementation Report by the fourth quarter of 2006. Commence implementation of NANSIS by 2007.

**Planned Action Implementation Agency:** Ministry of Health.

**Status:** Work to start.

#### C4.9

**Plan-Specific Actions:** National Food Security and Early Warning Information System (FEWIS). *Note:* FEWIS is to be developed, maintained and supported by the ITSD of the Ministry of Agriculture, Animal Resources and Forestry to facilitate and support the National Food Security and Early Warning activities of the Ministry.

**Prerequisites:** (i) The FEWIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Agriculture, Animal Resources and Forestry.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** The Ministry of Agriculture, Animal Resources and Forestry to commission and complete the FEWIS Project Implementation Report by the third quarter of 2007. Commence implementation of FEWIS by 2008.

**Planned Action Implementation Agency:** Ministry of Agriculture, Animal Resources and Forestry.

**Status:** Work to start.

**C4.10**

**Plan-Specific Actions:** The Environmental Monitoring Information System (ENIS). *Note:* ENIS is used to support environmental impact assessment activities of the Ministry as well as environmental protection public awareness and education programs.

**Prerequisites:** (i) The ENIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Lands, Human Resettlement and Environmental Protection.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** The Ministry of Lands, Human Resettlement and Environmental Protection to commission and complete the ENIS Project Implementation Report by the second quarter of 2007. Commence implementation of ENIS by 2008.

**Planned Action Implementation Agency:** Ministry of Lands, Human Resettlement and Environmental Protection.

**Status:** Work to start.

#### CMN-5: Computer-based Information System Implementation Initiatives Targeted at the Delivery of Community-based Government Services: Phase 2 Projects

Implementation Details Requirements	A number of the database and information systems identified for implementation will required a Project Implementation Report detailing key implementation issues including addressing technological and human resource requirement issues as well as project implementation cost and funding issues
Program Ownership	The relevant Government Ministries and PSOs
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To bring Government closer to the people</li> <li>• To support the administrative and service delivery activities and operations of local Government units</li> <li>• To modernize the operations of the civil and public service</li> <li>• To facilitate administrative and service delivery cost reduction and the improvement in productivity within the civil and public service</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To develop specific computerized database and information systems with public interface components to support community-based services and information delivery services by Government Ministries and PSOs</li> </ul>

**C5.1**

**Plan-Specific Actions:** Rural Development Information System (RUDIS). *Note:* RUDIS is to be an integrated rural development information system to serve as a comprehensive dynamic database and information system on all aspects of rural development. Information in RUDIS will contain updateable details on rural communities, including: (i) a definition of what constitutes a rural community in a given Prefecture; (ii) their number in a given commune or Prefecture, as well as the status and profile of these rural communities in terms of population and the population distribution, amenities and social infrastructure (the type, number and the state of hospitals, community centers, schools, etc in the community); and (iii) the physical and communications infrastructure (roads, water, electricity, telephone, radio service, etc), among other things.

**Prerequisites:** (i) The RUDIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of Ministry of Local Government, Good Governance, Community Development and Social Affairs.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Ministry of Local Government, Good Governance, Community Development and Social Affairs to commission and complete the RUDIS Project Implementation Report by the second quarter of 2007. Commence implementation of RUDIS by 2008.

**Planned Action Implementation Agency:** Ministry of Local Government, Good Governance, Community Development and Social Affairs.

**Status:** Work to start.

**C5.2**

**Plan-Specific Actions:** Communal Information System (COMIS). *Note:* COMIS will complement RUDIS and will be used to support all aspects of district level administration. It will hold administrative information on a sector-by-sector basis within a given commune. It will also hold publicly accessible information on Government services and other information required to bring Government closer to the people.

**Prerequisites:** (i) The COMIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Local Government.

**Planned Action Linkages:** C5.1

**Time-Bound Measurable Targets:** Ministry of Local Government, Good Governance, Community Development and Social Affairs to commission and complete the COMIS Project Implementation Report by the second quarter of 2007. Commence implementation of RUDIS by 2008.

**Planned Action Implementation Agency:** Ministry of Local Government, Good Governance, Community Development and Social Affairs.

**Status:** Work to start.

**C5.3**

**Plan-Specific Actions:** The Rwanda Agricultural Information System (RAGRIS). *Note:* RAGRIS will be organized into a number of components, some of which will be publicly accessible via the Telecenters, GovNet nodes, the Internet, and other public electronic information access points and centers. Some of the components of RAGRIS are: (i) RAGRIS-Admin, which will concentrate on information and details relating to the Ministry of Agriculture, Animal Resources and Forestry, its institutions and divisions including the agricultural colleges, Research Institutions and other structures and bodies concerned with agriculture in Rwanda; (ii) RAGRIS-Stats, which will be a publicly accessible component of RAGRIS and which will serve as an electronic database and information system on statistical details relating to agriculture in Rwanda. The agricultural statistical information and data to be hosted on RAGRIS-Stats will go beyond the statistical information on agriculture normally produced by the Government statistical service; and (iii) RAGRIS-Info, which will be one of the publicly accessible components of RAGRIS. It will host current information on agricultural inputs and their cost, weather and climatic information to advise farmers, Government agricultural services and incentives, local agricultural input prices and prices of commodities, etc.

**Prerequisites:** (i) The RAGRIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Agriculture.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Ministry of Agriculture, Animal Resources and Forestry to commission and complete the RAGRIS Project Implementation Report by the second quarter of 2007. Commence implementation of RAGRIS by 2008.

**Planned Action Implementation Agency:** Ministry of Agriculture, Animal Resources and Forestry.

**Status:** Work to start.

**C5.4**

**Plan-Specific Actions:** Land Records Information System (LARIS). *Note:* LARIS is to be developed, maintained and supported by the ITSD of the Ministry of Lands, Resettlement and Environmental Protection. It is to be used by the departments and agencies responsible for land administration and allocation and for the registration of lands and titled deeds. LARIS will serve as a computerized database information system and an electronic archive of all details relating to land administration, allocation, registration and utilization in Rwanda.

**Prerequisites:** (i) The LARIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Lands.

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Ministry of Lands, Human Resettlement and Environmental Protection to commission and complete the LARIS Project Implementation Report by the second quarter of 2007. Commence implementation of LARIS by 2008.

**Planned Action Implementation Agency:** Ministry of Lands, Human Resettlement and Environmental Protection.

**Status:** Work to start.

**C5.5**

*Plan-Specific Actions:* National Education and Training Opportunities Database System (NETODS). *Note:* NETODS is to be developed, maintained and supported by the proposed National Vocational Training Commission (NVTC). It is to serve as a publicly accessible source for information on vocational and other educational training opportunities at the NVTC training centers, universities and colleges throughout the country.

*Prerequisites:* (i) The NETODS Project Report covering implementation details and plans, and the cost of the system.

*Planned Action Linkages:* H11.2

*Time-Bound Measurable Targets:* The NVTC to commission and complete the NETODS Project Implementation Report by the second quarter of 2006. Commence implementation of NETODS by 2007.

*Planned Action Implementation Agency:* The National Vocational Training Commission (NVTC).

*Status:* Work to start.

**C5.6**

*Plan-Specific Actions:* Disaster Preparedness Information System (DIPIS). *Note:* DIPIS is to be developed, maintained and supported by the ITSD of the Ministry of Lands, Human Resettlement and Environmental Protection to support and facilitate disaster preparedness activities and operations in the country.

*Prerequisites:* (i) The DIPIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Lands, Human Resettlement and Environmental Protection.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Lands, Human Resettlement and Environmental Protection to commission and complete the DIPIS Project Implementation Report by the second quarter of 2007. Commence implementation of DIPIS by 2008.

*Planned Action Implementation Agency:* Ministry of Lands, Human Resettlement and Environmental Protection.

*Status:* Work to start.

**OB-1**

*Plan-Specific Actions:* Integrated Financial Management System (IFMIS). *Note:* The system will improve the existing SIBET system to provide a standardized financial management information system that will enable Ministries to track and monitor budgetary status, and performance and year-end results, including complete information on budget balances. It will facilitate synchronization of planning, budgeting and performance assessment and consolidation of financial data thus making possible analysis of the entire Government financial system.

*Prerequisites:* (i) The IFMIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Finance and Economic Planning.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Finance and Economic Planning to commission and complete the IFMIS Project Implementation Report by the second quarter of 2007. Commence implementation of IFMIS by 2008.

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning in collaboration with RITA.

*Status:* Work to start.

**OB-2**

*Plan-Specific Actions:* Human Resource Management System (HRMS). *Note:* The HRMS system will provide electronic control of personnel and will be spearheaded by the MIFOTRA. The basic component of the entire system will be the human resource management information module, which will contain all personnel records and transactions. Data from the modules will be accessed by Ministries and consolidated into macro statistics useful in policy formulation and analysis and other decision-making activities.

*Prerequisites:* (i) The HRMS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Public Service and Labor.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Public Service and Labor to commission and complete the HRMS Project Implementation Report by the second quarter of 2007. Commence implementation of HRMS by 2008.

*Planned Action Implementation Agency:* Ministry of Public Service and Labor in collaboration with RITA.

*Status:* Work to start.

**OB-3**

*Plan-Specific Actions:* Physical Assets Management Information System (PAMIS). *Note:* The system will provide modules that maintain a record of each physical asset from its acquisition through to its maintenance, rehabilitation and disposal. The Ministry of Infrastructure responsible for the construction and maintenance of key Government infrastructure facilities will operate separate information systems with functional features that will enable them to develop inventories and track maintenance and expenditures and, at the oversight level, maintain a comprehensive physical assets database with information on budgets, expenditures, revenues, inventories, maintenance and utilization, deployment and distribution, etc.

*Prerequisites:* (i) The PAMIS Project Report covering implementation details and plans, and the cost of the system. (ii) The setting up of the ITSD of the Ministry of Infrastructure.

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Infrastructure to commission and complete the PAMIS Project Implementation Report by the second quarter of 2007. Commence implementation of PAMIS by 2008.

*Planned Action Implementation Agency:* Ministry of Infrastructure in collaboration with RITA.

*Status:* Work to start.

## **E-GOVERNMENT AND E-GOVERNANCE SUB-PLAN: THE IMPLEMENTATION SCHEDULES OF THE PLANNED ACTIONS**

## MULTI-SECTORAL ECONOMIC DEVELOPMENT AND ICT-2020 POLICY IMPLICATIONS, AND RISK FACTORS OF THE SUB-PLAN

### Possible Contributions to the Realization of the GOR's Multi-Sectoral Economic Development Policy

The Planned Actions identified for implementation under this sub-plan will contribute to the development of the key sectors of the economy. It is envisaged that the modernization of Government administration and improvement in service delivery through the deployment and exploitation of ICTs will have an indirect positive impact on economic activities in the agricultural, services and industrial sector. For example, the improvement of Government support and facilitating services to the private sector will no doubt boost the development of the service and the industrial sector of the economy.

More specifically, the realization of the GOR's policy goal to develop a competitive, high value-added service sector to generate employment and serve as an engine for accelerated development and economic growth with the potential to develop into a business service-hub of the sub-region will not be possible without an improvement in Government administration and service delivery.

Also, the Planned Actions identified for implementation under this sub-plan have the potential to contribute towards the realization of the goal to develop a viable ICT production industry, a vibrant cottage industry and a mass-consumer products light industry capable of generating economic growth and employment and producing goods for the domestic market and for export into the sub-regions and beyond.

Overall, the implementation of the Planned Actions of this sub-plan will indirectly but effectively contribute towards the realization of the GOR's multi-sectoral economic development policy.

### Areas of Emphasis as per the ICT-2020 Policy

The majority of the Planned Actions identified for implementation under this sub-plan lay emphasis on the exploitation and utilization of ICTs to facilitate Government administration and service delivery within the context of the deployment of e-Government services. This emphasis on ICT exploitation and utilization initiatives is realistic since most of Government administration and service delivery activities are more directed at the utilization of ICTs to support these activities rather than on the production or development of ICTs. It is envisaged, however, that the wide-spread deployment and exploitation of ICTs in Government Ministries and Public Sector Organizations will boost demand for ICT services and products in the country and this will in turn support the development of a local ICT production and service sector in the long run.

On the whole, this sub-plan will contribute to the realization of the GOR's policy goal aimed at simultaneously pursuing both ICT exploitation and production policy involving the utilization and exploitation of ICTs to support the delivery of Government services and the activities of various sectors of the economy as well as the production, development and delivery of ICT products and services, i.e. towards the development and promotion of an ICT industry and service sector.

### Expectations for the Development of Rwanda's Information and Knowledge-based Society and Economy (IKE) Development Goals

It is anticipated that the implementation of the Planned Actions of the *e-Government and e-Governance Sub-plan* will contribute to the process of the development of Rwanda's information society and economy – the ultimate goal of the Rwandan ICT-led development vision. In particular, it is envisaged that the implementation of the initiatives of this sub-plan will lead to the achievement of the following Information and Knowledge Economy (IKE) goals:

- The development of an economy based on a rich pool of highly skilled human resources in critical skill areas relevant for developing and maintaining a competitive edge on the global market
- The development of an economy in which the majority of the working population is either directly or indirectly involved in information and communications related activities
- The development of an economy characterized by widespread deployment and exploitation of ICTs within the society to support the delivery of health, education, Government and social services
- The development of an economy in which a reasonably large proportion of the population has access to informa-

tion and communications technology products and services

- The development of an economy in which the provision and delivery of goods and services of the key sectors of the economy are to a large extent facilitated by information and communications technologies
- The development of an economy in which the provision and delivery of services by Government and its administrative machinery are to a large extent facilitated by information and communications technologies
- The development of an economy based on an advanced and reliable national information and communications infrastructure
- The development of an economy based on a literate society with a high proportion of computer literates

### The Risk Factors

The deployment and exploitation of ICTs to facilitate Government administration and service delivery will require financial, technological (ICT) and human resources. There is a risk of under-utilization of the deployed resources if specific procedures are not put in place to facilitate their proper exploitation. In addition, there is that risk of going ahead and deploying computer equipment and resources without putting in place the required corresponding technical and management team to support the utilization of these resources.

Another risk area may arise in situations where some of the key Planned Actions and initiatives of the sub-plan are not implemented for one reason or another. It will be difficult to effectively implement a number of the other nine sub-plans if some of the key programs and initiatives designed for facilitating Government administration and service delivery are not implemented. For example, a number of the programs and initiatives identified for implementation under the *ICTs in Education Sub-plan* will be implemented by the Ministry of Education, and cannot be effectively implemented if the programs and initiatives identified for facilitating the Ministry's administration and service delivery activities are not implemented. The same is the case for other Ministries and PSOs expected to support the implementation of sub-plans like Social Development; Private Sector Development; Legal, Regulatory, Institutional Provisions and Standards; Infrastructure, Equipment and Content, and others.

## THE SUB-PLAN FOR PRIVATE SECTOR DEVELOPMENT

### Summary of National Strategy and Policy Linkages of the Sub-plan

#### Relevant Vision for Rwanda (VfR) Mission Strategies

To promote and encourage the deployment and utilization of ICTs within the economy and society.

#### Relevant Government Policy Commitments

*Commitment to the Development of the Service Sector into the Business Service Hub of the Region Through the Deployment and Exploitation of ICTs.*

The GOR fully acknowledge the need for Rwanda to develop a regional competitive advantage in the area of ICT exploitation and production through the development of a competitive ICT industry and service sector. The GOR believes that ICTs can serve as the engine for developing these targeted lead sectors of the economy into a competitive regional business service-hub.

The GOR further believes that Rwanda, by extensively deploying ICTs to support the development of its service sector can serve as the Dubai of the region and provide ranges of off-shore, banking and financial services to business community in the region and beyond. The Government is therefore committed to facilitating the development of the service sector of the economy into the business service-hub of the region through the deployment and exploitation of ICTs.

#### *Commitment to Facilitating the Private Sector*

The GOR recognizes the critical role that the private sector can play as a key partner in the process of moving Rwanda into an information and knowledge economy. The Government is therefore committed to promoting and facilitating the role of the private sector in the development and participation in the Rwandan information society and economy.

The Government is further committed to the creation of a stable economic and investment climate that will assist both domestic and foreign private sector organizations in the development of: the physical telecommunication and communications infrastructure and other ICT infrastructure; information resources and systems to support the activities of various sectors of the economy as well as in the development of human resources in ICT and other skill areas required by the information economy; and in the mobilization of financial resources and other technological resources to aid the process of developing and exploiting the opportunities of the information economy.

#### Relevant ICT4D Policy Expectations

- Support the creation of the necessary enabling environment to facilitate the deployment, utilization and exploitation of ICTs within the economy and society
- Facilitate the development of a local ICT industry to facilitate the production, manufacturing, development, delivering, and distribution of ICT products and services
- Contribute to the development of the national human resource capacity to meet the changing demands of the economy
- Support the development of the national information and communications infrastructure
- Contribute to the development and implementation of e-Commerce in Rwanda
- Facilitate the development and promotion of the necessary standards practices and guidelines to support the deployment and exploitation of ICTs within the society and economy
- Facilitate the modernization of the agricultural sector to improve of its productivity, competitiveness and its contribution to food security, employment generation and economic development
- Promote widespread deployment and access to information and communication technologies and resources within the community in both the urban and rural areas of the country
- Contribute to the development and implementation of e-Government, e-Commerce and e-Education in Rwanda

#### Policy Action Items

To implement its ICT4D policy intentions in the area of private sector development within the context of facilitating the development of the Rwanda information and knowledge-based economy and society, the Government is committed to implementing specific Planned Actions targeted at achieving the objectives and goals of the following policy action items:

##### *Policy Action Item 1: Strengthen Rwanda's Private Sector Companies*

- Increase production of goods and services for both export and domestic consumption.
- Promote quality standards for Rwandan products and services.
- Promote and continue the privatization process.
- Explore and develop regional markets.
- Solve the difficulty of obtaining raw materials and other inputs at reasonable cost.
- Increase the supply of business space.
- Improve the local sourcing of required equipment.
- Provide better transport facilities.
- Promote the creation of packaging companies.
- Reduce taxes.
- Develop a vibrant Private Sector Federation.
- Encourage the adoption and compliance to international standards (ISO, HACCP, etc.)
- Provide dispute arbitration and business challenge assistance.
- Perform private sector advocacy in public-private partnership.

##### *Policy Action Item 2: Facilitate Sustainable Funding Sources for Rwanda's Private Sector*

- Provide wider access to finance
- Improve the services delivery in the Financial Sector
- Encourage investments by Rwandans to participate in the purchase of large enterprises
- Facilitate private sector investments in methane gas exploitation and distribution

##### *Policy Action Item 3: Encourage Investments in the Private Sector*

- Encourage and promote Foreign Direct Investment (FDI)
- Promote the private sector within the Rwandan Diaspora
- Create a Rwandan Stock Exchange and encourage companies to list
- Attract venture capital funds

##### *Policy Action Item 4: Provide Information to the Private Sector*

- Provide wide-ranging information for the private sector such as trade information, regulations, market indicators, etc.
- Promote web applications to allow different sections of the private sector to access its sources and targets
- Launch trade points
- Encourage visits to trade fairs and exhibits abroad
- Encourage the set up of trade fairs and exhibits in Rwanda
- Encourage the involvement of the private sector in regional and African trade activities

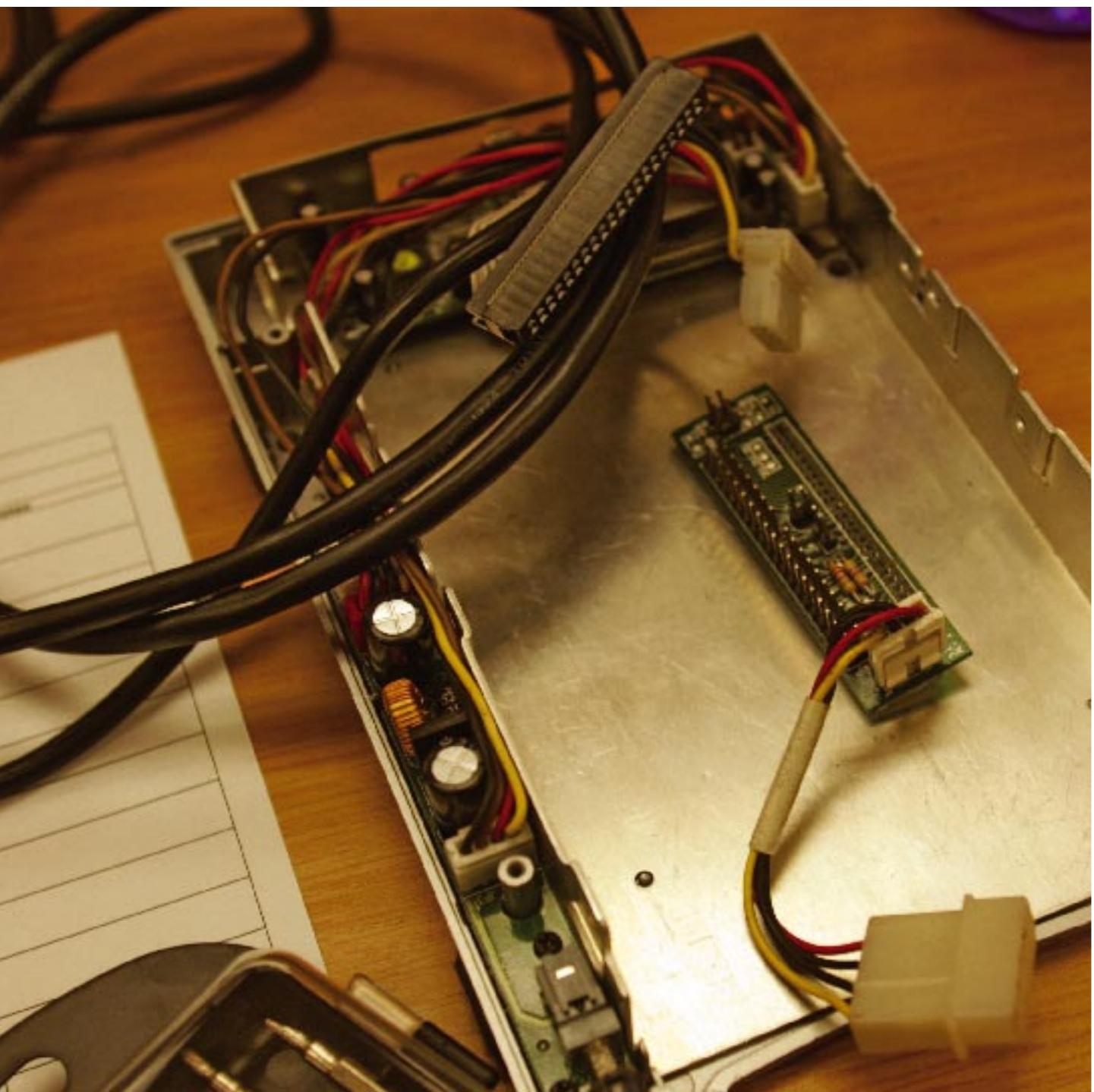
##### *Policy Action Item 5: Encourage the Adoption and Use of ICT in the Private Sector*

- Ensure that the private sector workforce is competent in all aspects of ICT: office technology, understanding and using applications, communications, etc.
- Develop standards of ICT literacy (or adopt specific standards) to improve the delivery of training.
- Encourage excellence in the use of ICTs.
- Encourage partnerships between ICT companies, both local and international, and the private sector.

##### *Policy Action Item 6: Address Key Challenges and Opportunities for SMEs*

- Direct special attention to SMEs by constantly reviewing their status, challenges and problems.

- Revise the legal framework to ensure that SMEs can operate in a more agile way and are not held back by rules and regulations meant for larger operations.
- Encourage the automation of SMEs at early stages to avoid complex implementations when they are larger.
- Ensure that SME management is competent in modern organizational skills such as business process re-engineering, project management, financial management, quality management, etc.
- Develop relationships between the financial sector and the SME segment of the private sector to ensure that the latter is able to access fair and useful financing.
- Develop the right backdrop for SMEs where they can seek advice, counsel, and guidance on all issues such as: markets, technologies, organization, legal and other issues.



## PLANNED ACTIONS

### PSD-2.01: Business Start-up Advisor

Type	Development Projects
Relevant NICI-2005 Plan	This Planned Action is an aspect of P8.1 of the NICI-2005 Plan
Roll-over Planned Actions and Initiatives	P8.1: Set up Career and Business Development Advisory Centers (CABDACs)
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> Clear definition of SME start-up requirements <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives
Implementation Agencies	Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives in collaboration with: Rwanda Investment and Export Promotion Agency; Private Sector Federation; National Civil Society Platform and RITA

#### Planned Action Details

*Purpose:*

To facilitate the establishment of private businesses easily, efficiently and with transparency, without the added expense of involving professional services.

*Description:*

Starting up a new company in Rwanda has never been an easy task. The alternatives available are not commonly known. Different types of companies need different documents, authorizations and procedures. Both counsel and information is required to ease the task for citizens. Furthermore, such an effort should be opened up to international companies wishing to commence operations in Rwanda.

This Planned Action would provide continuous information and learning opportunities about issues concerning the establishment of small to medium enterprises in Rwanda.

The assistance provided would cover legal registration issues, relationships between employees and employer, relationships with the Ministry of Public Service, the Social Security (Caisse Sociale), accounting and Ministry of Finance requirements, taxation, etc.

The Planned Action covers the following steps:

*Step 1:* Identify all types of companies that can be registered in Rwanda, starting from specialized services such as catering, shops and cosmetics and through to more commercial services such as trading and industry.

*Step 2:* All information and requirements for such companies would be identified and clearly documented. Forms would be prepared for downloading. Special addresses would be given in case there are visits to be made when collecting the proper authorizations or documents.

*Step 3:* A website would be developed which would guide the visitor to the type of company that he or she wishes to establish. Decision criteria would be identified allowing the visitor to select the most suitable format for the company. The site would also provide small businesses with updates about legal, accounting, labor relationships, insurance, social security and other issues of interest to the business community.

Some sections could cover new and interesting trends regarding businesses and efficiency of work among others. Training on specific subjects would also be made available in order to encourage continuous improvement in skills.

The site could be set up and maintained by the private sector in order to insure more up-to-date supply of innovative information and trends about business. This would be done in cooperation with the Government sector in order to maintain the links with all the start up, legal and accounting requirements.

*Step 4:* An advisory group would be established to assist citizens whenever the site information is not sufficient. Such an advisory group can also direct visitors to sources of micro-finance or other types of lending.

Related activities would be in the form of road shows, workshops or published material.

#### *Benefits of the Planned Action:*

- To assist the growth of an emerging private sector
- To promote the start-up of companies by women who have traditionally shied away from such an initiative because of its complexity and its male domination

#### *Budgetary Estimate:*

Category B (between \$200,000 and \$500,000)

<b>PSD-2.02: Trade Information Center</b>	
Type/Sector and Scope	Development Projects
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	<p><b>This Planned Action is an aspect of F5.2 and F5.5 of the NICI-2005 Plan</b></p> <p><b>F5.2:</b> Set up a Virtual One-Stop Investment Promotion and Facilitation Site</p> <p><b>F5.5:</b> Set up the Virtual Trade Fair Site to promote Rwandan Products and Services on the Internet</p>
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> General revision of the legal framework related to trade in Rwanda. Such laws and regulations may need to be updated to fit with technological developments.</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives
Implementation Agencies	Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives in collaboration with: Private Sector Federation; Ministry of Foreign Affairs and Cooperation; Rwanda Investment and Export Promotion Agency and RITA

#### **Planned Action Details**

##### *Purpose:*

To set up a Web-based Trade Information Center that provides Rwandan and international players with the information needed to improve and modernize the Trade sector in Rwanda' Trade is one of the most urgently needed developments in Rwanda. The sector needs to be improved dramatically. Rwanda's trade has to increasingly compete with that of other regional and African economies. With the advent of the Internet and e-Commerce, the trade sector has to compete with an international community. Rwanda has begun to adjust to changes in trade in the region as well as the world economy, including:

- Increasing globalization of commerce
- The Internet and e-Commerce
- Advent of e-Government

- Entry into the World Trade Organization (WTO)
- Rapid development of technology
- Stricter imposition of transparency

The impact of these and other changes will be felt most severely by small and medium-sized enterprises (SMEs).

To help address problems in the international trade system in general and those of SMEs in particular, the Trade Efficiency Initiative (TEI) was launched in 1992 by the United Nations Conference on Trade and Development (UNCTAD). The methodology of the present Planned Action is based on that of the TEI. It should be applied in detail in the Rwandan context to a set up an on-line Trade Information System and Trade Points. The purpose of the TIC will be to set up and maintain a mechanism whereby information on trade and related topics is gathered, elaborated, and made available to the public and private sectors in Rwanda and abroad. The TIC will promote the flow of business information and provide equal access to it to both the local and foreign business communities by:

- Encouraging businesses to explore the appropriate scope for internationalization of their activity
- Facilitating circulation of and access to economic and business information (particular consideration should be given to SMEs and newcomers to international trade)
- Improving training capacities for more effective use of business information by the Public Sector, business associations and individual firms
- Supporting the use of internationally accepted standards, formats, and coding systems used in the dissemination of information
- Ensuring that the TIC in Rwanda centralizes and makes available for retrieval all relevant information on Rwandan trade regulations product-by-product, using standard formats
- Ensuring the availability and reliability of up-to-date trade statistics
- Using Web-based technologies in the collection and dissemination of statistics
- Encouraging Government departments that generate economic information to meet the needs of the national and international business communities.

The following information can be included:

- Investment policies, incentives and opportunities
- Export policies, procedures and regulations, export licensing, export quotas, prohibited exports, export tariffs, export payment arrangements, related fiscal charges on exports, export procedures and documentation, export finance, and export promotion zones
- Import policies, procedures and regulations; information on prohibited imports; import tariff classification; import tariffs and taxes; import licensing; import quotas; customs valuation, duties, and clearance; special customs zones; pre-shipment inspection; special import requirements; environmental regulations; basis of duty assessment; entry rules and procedures; transit and re-export; antidumping regulations; required import documents; packing, marking, labeling, sanitary and safety rules; trade related intellectual property rights
- Trade and other foreign economic agreements, including bilateral, sub-regional, regional, multilateral, and commodity trade agreements; bilateral trade issues and foreign aid and grants.
- Foreign exchange regime, including currency convertibility and exchange regulations
- Market opportunities for Rwandan products including information on prices, costs of reaching the market and standards required.
- Economic data including national income accounts, sectoral origin of GDP, balance of payments, inflation data, price information by product category, short-term price factors, price discounts/premiums, wholesale/retail prices, local distribution costs, FOB/CIF prices and freight rates.
- Basic country data, including population, religions, languages, climate, information on the capital and other main trading centers, trade fairs, public holidays, working hours, time changes, weights and measures, electric current, visa requirements, communications, fiscal year, Government, political conditions bearing on trade, regional and international affiliations, business etiquette and main hotels
- Transport and storage, including ports, sea, air, road and rail transport and warehousing and transit facilities.

The main challenge to this Planned Action is to keep the information up to date and to ensure its widespread dissemination.

**Benefits of the Planned Action:**

- Injecting the trade sector with critical and useful information would improve its competitiveness
- Encouraging the trade sector directly would create a beneficial perception that the Government is behind trade improvements and hence encourage the sector's development
- Encourage foreign trade and investments because of the transparency in regulations and procedures as exposed by the center

**Risks:**

- Incomplete or inaccurate information.
- Insufficient or improper dissemination of the information

**Budgetary Estimate:**

Category D (between \$800,000 and \$1,000,000)

**Schedule:**

- Phase 1: Establish a unit that would be in charge of the whole project (around 2 months)
- Phase 2: Define and structure the information to be processed by the center (around 3 months)
- Phase 3: Collect and Verify data.
- Phase 4: In parallel with Phase 3, develop the databases, the websites and other media.
- Phase 5: Once information is ready, promote the center both locally and internationally.

**PSD-2.03: Activate and Speed Up On-line Banking**

Type	Institutional Projects
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of P6.2 and P6.4 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	P6.2: Implement an initiative to promote and encourage Rwandan Commercial Banks and Financial Institutions to provide their services on-line to the public. P6.4: Implement a Program to facilitate electronic (on-line) inter-bank transaction within the Commercial Banking System and between the Central Bank of Rwanda and the Commercial Banks
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> General revision of the legal framework related to e-Banking in Rwanda. In addition, issues of security and confidentiality need to be addressed. <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	Central Bank
Implementation Agencies	The Central Bank of Rwanda in collaboration with the Banking Sector

**Planned Action Details****Purpose:**

To help build a flourishing and solid Banking Sector

**Description:**

At present, few banks in Rwanda provide transactional or other services on-line. This Planned Action seeks to encourage Banks to provide a wide range of transactional services on-line, and to improve operations between banks as well as with the private and Public Sector. The benefits as shown below are many. Furthermore, local banks need to assess the potential of foreign banks leapfrogging them and gaining market share by providing such services. The Central Bank needs to speed up the following:

- Encourage all banks to convert their currently manual services to on-line transactional services
- Implement a real time check clearance system to avoid delays in check clearance often amounting to 7 days
- Encourage users of on-line banking by removing all charges related to such use

If most banks provided on-line services, the following benefits would result:

- This would generate the need for using the Internet as a convenient 24/7 service.
- The large number of account holders converting to Web-based services would result in increased Internet penetration.
- Cost reduction to banks: it has become a platitude to say that an ATM transaction costs 10% of a manual one and that an Internet transaction costs 10% of an ATM transaction. Though such a statement has not been substantiated, it has been corroborated by the widespread of on-line banking. More and more banks in the west are now charging their customers for transactions carried out in the bank's premises.
- Improved on-line banking by Rwandan banks would avoid the penetration of the sector by non-Rwandan banks and would protect the sector.
- Reduction of costs for the private sector. As in other Planned Actions presented in this project, the aim is to reduce the costs on the private sector, which can be reflected as a reduction in the cost of living.

**Budgetary Estimate:**

Category A (Less than \$200,000)

**PSD-2.04: The ICT Export Promotion Program**

Type	Consulting Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	RIEPA
Implementation Agencies	RIEPA, in collaboration with the Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives; RITA; Rwanda ICT Association and the Private Sector Federation

**Planned Action Details****Purpose:**

The purpose of this Planned Action is to build the capability of the Rwanda Investment and Export Promotion Agency (RIEPA). This entity has already been launched. RIEPA represents Rwanda by promoting its services and managing their execution. It needs to harness ICT to improve its capabilities.

**Description:**

Rwanda has a wide variety of services that it can offer. These are mostly in the areas of turnkey projects and technical expertise. During the current period, it is feared that with the world looking at African nations with larger natural resources, Rwanda may be left behind.

This Planned Action proposes setting up a unit within the Government that is strongly partnered with the private sector. The unit will have the following objectives and will initially concentrate on ICT and related services:

- Ensure that Rwanda is well represented in all areas where business is being promoted. This relates to a separate Planned Action where a strategy is followed to promote Rwanda in most trade fairs and exhibitions.
- Ensure that the private sector is aware of all new projects that are coming out in the region.
- Assistance to the private sector in acquiring the relevant information.
- Simplifying the procedures for bidding on such projects through simplification of export facilities, among other things.

- Representing Rwanda as a consortium so that new projects can be bid upon through this entity and its private partners.
- Managing and monitoring the projects undertaken through its offices.

The new unit can manage projects on behalf and in partnership with the private sector.

*Budgetary Estimate:*

Category E (between \$1 million and \$3 million)

#### PSD-2.05: Trade Points for Rwanda

Type	Institutional Projects
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of P5.4 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	F5.4 Set up One-Stop Export Promotion and Facilitation Centers
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i> PSD-2.02 The Trade Information Center</p> <p><b>PSD-2.04: Build the Capability of the Rwanda Investment and Export Promotion Agency</b></p>
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Rwanda Investment and Export Promotion Agency
Implementation Agencies	Rwanda Investment and Export Promotion Agency in collaboration with: Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives Private Sector Federation

#### Planned Action Details

*Purpose:*

To set up a Trade Point for Rwanda and related website.

*Description:*

Trade Points have been accepted as an efficient means of promoting trade. These will be a logical and practical extension of the Planned Action that proposes a Trade Information System. This will ensure timeliness and the receipt and dissemination of correct information, thus enhancing efficiency for import and export operations. Trade Points will act as both the focal point of trade information activities and a one-stop window for the provision of services to traders. Trade Points should combine the following elements:

- A center for facilitating trade, where services and advice are given by participants in foreign trade transactions (e.g. Customs, chambers of commerce, freight forwarders, transport companies, banks, insurance firms, etc.) These participants will be linked via a network with their own institutes to facilitate any on the spot transactions
- Access to the Trade Information Center and assistance and guidance in its use (See the separate Planned Action for the TIC)
- A global gateway connecting Trade Points to a worldwide network to facilitate access to additional information and transactional capabilities

The Planned Action will show how information should be exchanged with other Trade Points, related trading parties and customers and what formats and standards should be used. This will involve the above recommendations on how trade related information should be formatted and structured for exchange.

The legal and regulatory aspects of adopting electronic measures for trade will be reviewed as a first step. Development of the Trade Point will then go through the following stages:

Stage 1: Development of trading processes re-engineered to be suitable for publication on the web. This requires coordination between various parties such as banks, Public Sector agencies and customs.

Stage 2: Revision of the required legal procedures to ensure the proper implementation of the trading process.

Stage 3: Development of the proper exchange mechanisms needed to authenticate records, acquire and/or enter data and establish the proper applications for trading transactions.

Stage 4: Implementation of the Trade Point through a pilot project that is tried and tested to arrive at a fully working Trade Point.

Stage 5: Launch of the Trade Point to provide traders with the required Web-based processes. This requires training, awareness campaigns and support.

Stage 6: In this more advanced phase of Trade Point development, local connections should be set up from the Rwandan Trade Point to other Trade Points in the world.

It can be seen that the Trade Point Planned Action is strongly linked with that of the Trade Information Center.

*Current and On-going Work:*

A program exists with the aim of supporting Rwanda Investment and Export Promotion Agency (RIEPA) in developing and implementing a Trade Point center by July 2006.

*Budgetary Estimate:*

Category C (between US\$500,000 and US\$800,000)

#### PSD-2.06: Publish Terms of Tenders and Bids

Type	Development Projects
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of G8.2 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	G8.2 Government Electronic Procurement and Settlement System (GEPSS) Project
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i> The Government e-Procurement Portal</p>
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	Rwanda Investment and Export Promotion Agency
Implementation Agencies	Rwanda Investment and Export Promotion Agency in collaboration with Private Sector Federation; National Tender Board and RITA

#### Planned Action Details

*Purpose:*

To publish details of all tenders and bids issued in Rwanda in one centralized place thus providing opportunity for the private sector to a wider set of projects. Furthermore, there is a need to publicize international tenders for which Rwandan companies are suitable to bid.

*Description:*

One of the major problems faced by the private sector is knowledge of projects being tendered for, either by the Government or by other companies in the private sector. Currently, there is no centralized location for accessing this type of information. The main reason is that there is no entity to gather the data. Entering such information in a database and publishing it on a website is simple. It may therefore be beneficial to include this Planned Action as part of the Trade Information Center in the Ministry of Commerce.

The main purpose is to collect information about all the terms and conditions for all tenders and bids issued by both the private and the public sector. Suitable classifications would provide visitors to the site with quick access to their requirements. Free newsletters that select keywords of interest can be sent by the system to subscribers thus removing the need to constantly search for projects.

Furthermore, many international tenders and bids may be of interest to the Rwandan private sector. These are more difficult to collect but are as important as the local projects.

*Budgetary Estimate:*

Category A (Less than US\$200,000)

**PSD-2.07: National Business Development Services Network**

Type	Institutional Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Private Sector Federation
Implementation Agencies	Private Sector Federation in collaboration with Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives

**Planned Action Details**

*Purpose:*

To provide business assistance and training to private sector firms.

*Description:*

With the major changes that the NICI-2010 Planned Actions will bring about in the private sector, a change management principle should be observed: assist the various companies and train their staff. Assistance will be in the form of:

- Exposure to modern business and organizational practices
- Support when attending or participating in trade fairs and exhibitions
- Relaxation of complex regulations that inhibit efficient operations
- Coordination when forming task forces or groups of companies with similar interests
- Introduction to other private sector Planned Actions

The training will be aimed at skilled workers, middle and top management.

To concretize its National Business Development Network, the Rwandan Private Sector Federation (RPSF) will facilitate a discussion with CAPMER (the original Business Development Services), other existing BDS providers and select financing institutions to develop an integrated approach to supporting the development of Rwanda's private sector firms. The RPSF recognizes that without the existence of financial support and assistance driven response to private sector needs, this development will be difficult.

The Rwanda Private Sector Federation (RPSF) is going to create four additional BDS in all four new provinces (Eastern, Western, Southern, Northern provinces). A BDS has already been set up in the fifth province, Kigali City (CAPMER). The five BDS centers will serve the provincial associations directly. Provincial associations are provincial extensions of RPSF. According to the RPSF, the objective of BDS centers will be to provide direct assistance not only to associations, but also to all enterprises in the provinces. BDS centers will also improve the environment for small businesses by conducting research.

*Budgetary Estimate:*

Category E (Between US\$1 million and US\$3 million)

**PSD-2.08: Establish e-Commerce Resources Services Centers**

Type	Institutional Project
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of P5.5 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	P5.5 Set up the Virtual Trade Fair Site to promote Rwandan Products and Services on the Internet.
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> e-Commerce Law, Cyber laws, International Aspects and Standards, Consumer Protection, International Property Protection <i>Linkages:</i> <b>PSD-2.01:</b> Business Start-up Advisor <b>PSD-2.02:</b> Trade Information System and <b>RCA-2.04:</b> Multipurpose Community Telecenters
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives
Implementation Agencies	Ministry of Commerce, Industry, Investment Promotion and Exports, Tourism and Cooperatives in collaboration with: RIEPA; Private Sector Federation; Credit Cards Companies (SIMTEL); Banks and RITA

**Planned Action Details**

*Purpose:*

Establish e-Commerce Resource Service Centers (ERSCs) in key districts to facilitate the promotion of locally produced goods and services.

*Description:*

The Planned Action proposes the establishment of several ERSCs throughout Rwanda. They will be placed in key districts that have a need to promote their local produce and services.

Each ERSC is a single center equipped with ICT infrastructure and using a Web-based application to facilitate the promotion of local goods and services. The website will promote such goods and make them accessible to national and international markets.

Both the Public and the private sectors will play an important role in the set up and operation of these centers.

*Benefits of the Planned Action:*

- Promotion of local goods and services to local and international markets
- Creation of Jobs leading to poverty reduction and the reduction of urban migration

*Risks:*

- The introduction of these centers without taking care of VAT first
- Cyber security problems
- Lack of use after introduction

*Budgetary Estimate:*

Category C (Between US\$500,000 and US\$800,000)

## PLANNED ACTIONS ROLLED OVER FROM THE NICI-2005 PLAN

PSR-2: Programs to Promote the Development and Expansion of a Local Industry for Assembling, Repair, and Maintenance of Computers and Peripheral Equipment and Computer Systems	
Program Ownership	Ministry of Finance and Economic Planning
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To support the development and the growth of the ICT industry of the economy to facilitate the production, distribution and provision of ICT products, goods and services To promote the development and expansion of the service sector into a highly competitive value-added sector with the potential develop into a business service-hub of the region. To promote and facilitate the role of the private sector in the development and participation in the ICT industry and service sector.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To promote and facilitate the local assembly of computers, network equipment and other peripheral and electronic devices for the domestic market and for export into the sub-region and beyond To promote the development of a cottage industry for the repair, servicing and maintenance of computer and network equipment</li> </ul>

### P2.1

*Plan-Specific Actions:* Implement special tax policy instruments and budgetary provisions targeted at making the importation of computer equipment in component form cheaper than the importation of assembled computers and related equipment.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Implement in the 2007/2008 Budget and other subsequent Budgets (within NICI-2010 time frame) special tax provisions to facilitate the importation of computer components for local assembly

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning

*Status:* Work in progress.

### P2.2

*Plan-Specific Actions:* Implement a special tax instrument to reduce or eliminate taxes on locally assembled computers to encourage the purchase of these computers to boast the local computer assembly industry

*Prerequisites:* None

*Planned Action Linkages:* None

Implement in the 2007/2008 Budget and other subsequent Budgets (within NICI-2010 time frame) special tax instruments to reduce or eliminate taxes on locally assembled computers and related equipment.

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning

*Status:* Work in progress.

### P2.3

*Plan-Specific Actions:* Put in place a Government policy directive to encourage educational institutions, the civil and public services to purchase locally assembled computers and other peripheral equipment and devices to promote the development of the local computer industry

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Develop and implement by the fourth quarter of 2006 a Government Policy directive to encourage educational institutions, the civil and Public Service Organizations to purchase locally assembled computers and peripheral equipment and devices

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning

*Status:* Work to start.

### P2.4

*Plan-Specific Actions:* Put in place a Government policy directive to encourage the educational institutions, the civil and public services to contract reputable local companies (especially SMEs in the cottage industry) to carry out the repair, servicing and maintenance of their computer equipment and other peripheral devices

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Develop and implement by the fourth quarter of 2006 Government Policy directive to encourage educational institutions, the civil and public services to contract local computer system repair, servicing and maintenance companies

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning

*Status:* Work to start.

### P2.5

*Plan-Specific Actions:* Develop and implement a project to establish a National Computer Hardware Assembly Facility with private sector involvement

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Establish a National Computer Hardware Assembly Facility by 2008 Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives, the private sector, The National Vocational Training Commission (NVTC)

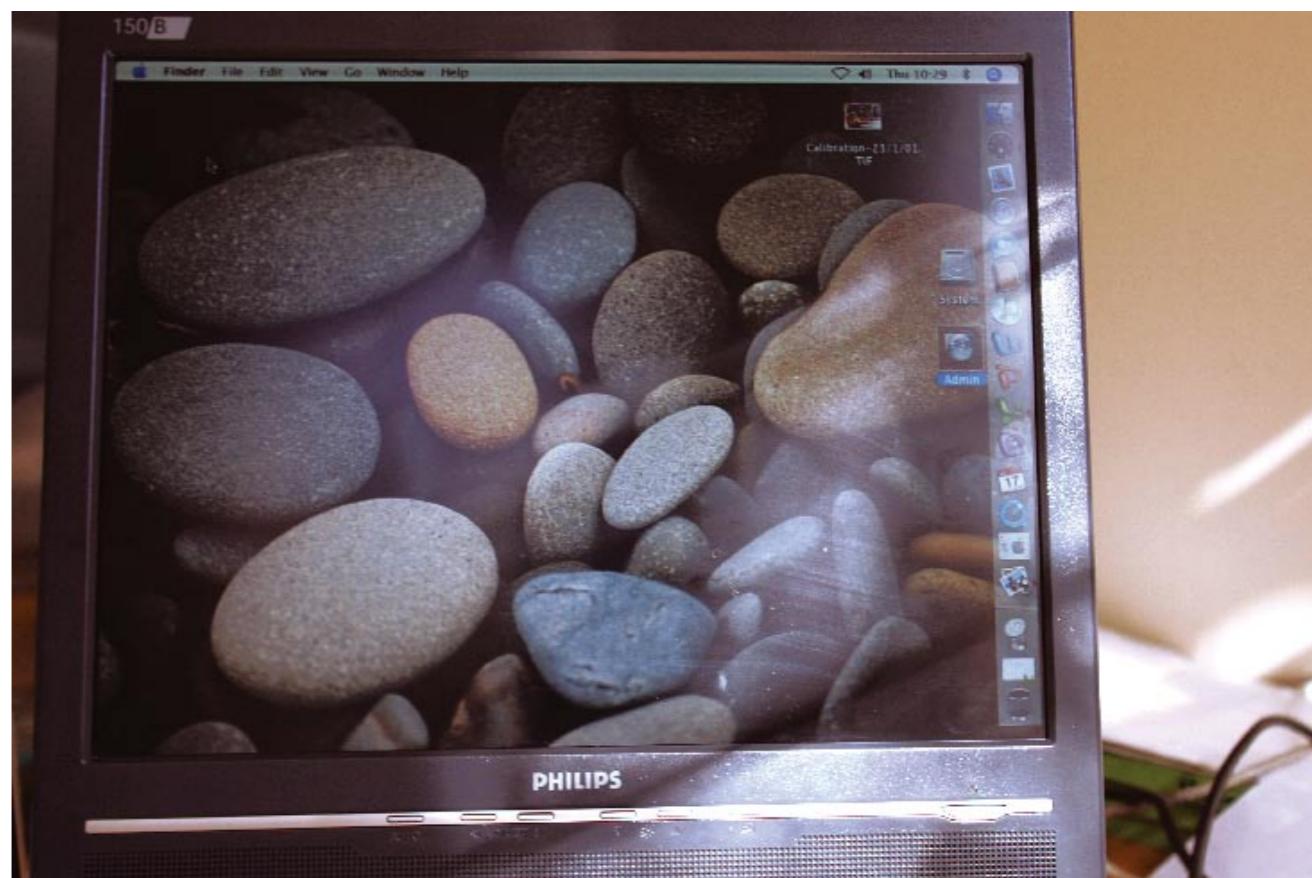
*Status:* Work to start.

### P2.6

*Plan-Specific Actions:* Develop and provide a 6-month computer hardware vocational course in the repair and servicing of computers targeted at school leavers to generate manpower for the local computer repair and servicing industry.

*Prerequisites:* None

*Planned Action Linkages:* H11.3



**Time-Bound Measurable Targets:** The NVTC Training Centers, NUR, KIST and other interested private and public ICT training institutions and establishments to develop and run a 6-month Certificate Vocational course in computer hardware repair and servicing in collaboration with public and private technical vocational institutions by the fourth quarter of 2006

**Planned Action Implementation Agency:** National University of Rwanda (NUR), Kigali Institute of Science and Technology (KIST)

**Status:** Work in progress.

#### PSR-3: Program to Promote the Development of Software Technology Parks (STPs)

Program Ownership	Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To support the development and the growth of the ICT industry of the economy to facilitate the production, distribution and provision of ICT products, goods and services To promote and facilitate the role of the private sector in the development of the ICT industry and service sector.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To promote the development of a competitive software development export sector with the active participation of local software houses and developers. To tap into the world-wide multi-million dollar off-shore software development industry To develop a competitive ISO standard local software development industry To encourage the creation of quality software development jobs To promote, encourage and facilitate the active participation of foreign investors in the local software development industry To promote joint ventures between local and foreign software houses to facilitate the rapid growth in the software industry and knowledge transfer.</li> </ul>

#### P3.1

**Plan-Specific Actions:** Develop and implement a Comprehensive Government policy guidelines and provisions to guide and facilitate the setting up of private STPs and public (Government-sponsored) STPs in the country.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Commission and complete Government policy guidelines and provisions for setting up STPs by the fourth quarter of 2006 Facilitate the setting up STPs by 2007 Establishment of private and public STPs to start by 2008

**Planned Action Implementation Agency:** Ministry of Commerce and Industry and Tourism

**Status:** Work to start.

#### P3.2

**Plan-Specific Actions:** Develop and implement specific incentive programs and packages (tax holidays, investment incentives, grants, loans etc) targeted at encouraging and facilitating local companies to set up of STPs within or outside the Export Processing and Free Zones (EPfZs)

**Prerequisites:** None

**Planned Action Linkages:**

#### F2.1

**Plan-Specific Actions:** Implement in the 2007/2008 Budget and other subsequent Budgets (within NICI-2010 time frame) special tax instrument to facilitate the setting up STPs within or outside the EPfZs.

**Planned Action Implementation Agency:** Private sector and public institutions interested in setting up STPs

Ministry of Finance and Economic Planning

**Status:** Work to start.

#### P3.3

**Plan-Specific Actions:** Implement a National Project to set up pilot public STPs in public institutions like NUR, KIST and in specially established Technology, Research and Development Parks

**Prerequisites:** None

**Planned Action Linkages:** F4.1

**Time-Bound Measurable Targets:** Set up a pilot public STPs at NUR, KIST and in specially established Technology, Research and Development Parks by 2008

**Planned Action Implementation Agency:** Ministry and Commerce and Industry and Tourism NUR, KIST

**Status:** Work to start.

#### P3.4

**Plan-Specific Actions:** Develop and implement specific incentive programs (tax holidays, investment incentives, grants, loans etc) to attract World-class Software Houses to set up private STPs either as sole ventures or as joint ventures with local software development companies

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Implement within the 2007/2008 Budget and other subsequent Budgets (within NICI-2010 time frame) special tax and incentive packages to attract World-class Software Houses to set up STPs within or outside the Export Processing and Free Zones (EPfZs)

**Planned Action Implementation Agency:** Ministry of Finance and Economic Planning

**Status:** Work to start.

#### P3.5

**Plan-Specific Actions:** Develop and implement initiatives to adopt and enforce ISO standards and quality levels in the Software Development Industry.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Develop and enforce ISO standards and quality levels in the Software Development Industry by the fourth quarter of 2007

**Planned Action Implementation Agency:** Ministry of Commerce, Industry and Tourism National Standard Organization, RITA

**Status:** Work to start.

#### PSR-4: Program to Develop and Implement Guidelines and Internationally-accepted Standards for the Provision of ICT Services by the Private Sector

Program Ownership	Rwanda Bureau of Standards and RITA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To promote and facilitate the role of the private sector in the development and participation in the Rwandan information society and economy.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To promote the development of a competitive value-added ICT service sector To promote, encourage and facilitate the provision of ISO standard ICT services by Rwanda Companies To promote the development of locally based world-class ICT Service Providers</li> </ul>

#### P4.1

**Plan-Specific Actions:** Set up Working Group with private sector involvement on developing a world-class ICT service sector in Rwanda

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** Set up the Working Group on Developing a world-class ICT service sector in Rwanda by the fourth quarter of 2006

*Planned Action Implementation Agency:* The Cabinet

*Status:* Work to start.

#### P4.2

*Plan-Specific Actions:* The RITA Working Group on Developing a world-class ICT Service Sector in Rwanda, in collaboration with the Rwanda Bureau of Standards to formulate guidelines and standards for the provision of quality ICT services by the private sector.

*Prerequisites:* The setting up of a Working Group on 'Developing a world-class ICT Service Sector in Rwanda'

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Formulate guidelines and standards for the provision of quality ICT services by the private sector by the fourth quarter of 2006

*Planned Action Implementation Agency:* The Working Group on Developing a world-class ICT Service Sector and the Rwanda Bureau of Standards

*Status:* Work to start.

#### P4.3

*Plan-Specific Actions:* Put in place mechanisms and procedures for implementing the guidelines and standards for the provision of quality ICT services by the private sector.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Begin the implementation of guidelines and standards for the provision of quality ICT services by the private sector by 2007

*Planned Action Implementation Agency:* Planned Action Implementation Agency: The RITA Working Group on Developing a world-class ICT Service Sector and the Rwanda Bureau of Standards

*Status:* Work to start.

#### P5.1

*Plan-Specific Actions:* Prepare a report on developing and facilitating B2C, B2B and B2G e-Commerce and e-Trade in Rwanda

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Commission and complete the Electronic Commerce and Trade Report by the fourth quarter of 2007

*Planned Action Implementation Agency:* Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives

*Status:* Work to start.

#### P5.2

*Plan-Specific Actions:* Implement a Pilot Business-to-Government (B2G) e-Commerce in the area of procurement of goods and services to involve a number of Government Ministries, PSOs and selected Suppliers and Service Providers

*Prerequisites:* The Electronic Commerce and Trade Report

*Planned Action Linkages:* G8.2

*Time-Bound Measurable Targets:* Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives to facilitate the implementation of a Pilot B2G e-Commerce system by 2007

Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives Participating Relevant

*Planned Action Implementation Agency:* Government Ministries, PSOs and Private Sector Organizations

*Status:* Work to start.

#### P5.3

*Plan-Specific Actions:* Set up e-Commerce Resource Service Centers (ERSCs) and Electronic-Trade Point Centers (ETPCs) in a number of key Prefectures

*Prerequisites:*

- The Electronic Commerce and Trade Report

#### PSR-5: Electronic Commerce (e-Commerce) and Electronic Trade (e-Trade) Initiative

Implementation Details Requirements	The Ministry of Commerce Industries and Tourism need to prepare a National Policy document to guide and facilitate the development of electronic commerce and electronic trade in Rwanda
Program Ownership	Ministry of Commerce Industries and Tourism
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To facilitate the development of the service sector into the business service-hub of the region through the deployment and exploitation of ICTs</li> <li>• To support the development and growth of the ICT industry to facilitate the production, distribution and provision of ICT products, goods and services</li> <li>• To promote and facilitate the role of the private sector in the development and participation in the Rwandan information society and economy.</li> <li>• To promote the rapid development of business-to-consumer (B2C), business-to-business (B2B) and business-to-Government (B2G) electronic commerce and electronic trade in Rwanda</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To kick-start e-Commerce and electronic trade in Rwanda</li> <li>• To facilitate the rapid development and the spread of e-Commerce services in the private sector</li> <li>• To facilitate the involvement of SMEs in domestic, regional and global e-Commerce and e-Trade.</li> <li>• To promote the development of business-to-consumer (B2C); business-to-business (B2B); and business-to-Government (B2G) e-Commerce in Rwanda</li> </ul>



*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Set up pilot e-Commerce Resource and Service Centers (ERSCs) or e-Commerce Booths in Kigali, Butare and other major cities by 2007 Set-up Electronic Trade-Point Centers (ETPCs) in Kigali, Butare and satellite ETPCs in other major provincial towns by 2007 Increase the number of ERSCs and ETPCs by 50% by 2008. Set up ERSCs and ETPCs in all Prefectures by 2010

*Planned Action Implementation Agency:* Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives

*Status:* Work to start.

#### P5.4

*Plan-Specific Actions:* Program to enact the relevant cyberlaws and other legal and legislative provisions to support the development of e-Commerce and e-Trade in Rwanda

*Prerequisites:*

- None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Enact relevant cyberlaws and necessary e-Commerce and e-Trade legal and legislative provisions by 2008

*Planned Action Implementation Agency:* Ministry of Justice The Parliament Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives

*Status:* Work to start.

#### PRS-6: The Electronic Banking Initiative

Program Ownership	Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>• To promote the development and expansion of the service sector into a highly competitive value-added sector with the potential develop into a business service-hub of the region. To promote and facilitate the role of the private sector in the development and participation in the ICT industry and service sector.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>• To put in place the necessary regulations to support on-line and Internet banking</li> <li>• To facilitate the development and provision of on-line financial services To promote the development of Rwanda as a regional hub for on-line financial and banking services</li> <li>• To promote the development of on-line inter-banking services within the Banking System of Rwanda</li> </ul>

#### P6.1

*Plan-Specific Actions:* Implement a Program to put in place the necessary banking and financial regulations and procedures to facilitate on-line banking and financial service provision in Rwanda and the Sub-region

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Put in place relevant Banking and Financial Regulations and Procedures to facilitate on-line banking and financial service provision by 2008

*Planned Action Implementation Agency:* The National Bank of Rwanda Ministry of Finance and Economic Planning Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives The National Bank of Rwanda

*Status:* Work in progress.

#### P6.2

*Plan-Specific Actions:* Implement an initiative to promote and encourage Rwandan Commercial Banks and Financial Institutions to provide their services on-line to the public. *Note:* This initiative is to speed-up the process of introducing on-line banking and Internet banking into Rwanda. Banks and other Financial Institutions will by this initiative be required to provide at least some of their services to the public on-line using either their property on-line system or the Internet or both.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Put in place and implement an initiative aimed at encouraging the provision of on-line services by the Banks and other Financial Institutions by 2008

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives The Commercial Banks and Financial Institutions

*Status:* Work in progress.

#### P6.3

*Plan-Specific Actions:* Implement a Program aimed at facilitating and promoting Rwanda as the regional hub for on-line and Internet banking services as well as for the provision of on-line financial services

*Prerequisites:* None

*Planned Action Linkages:* None

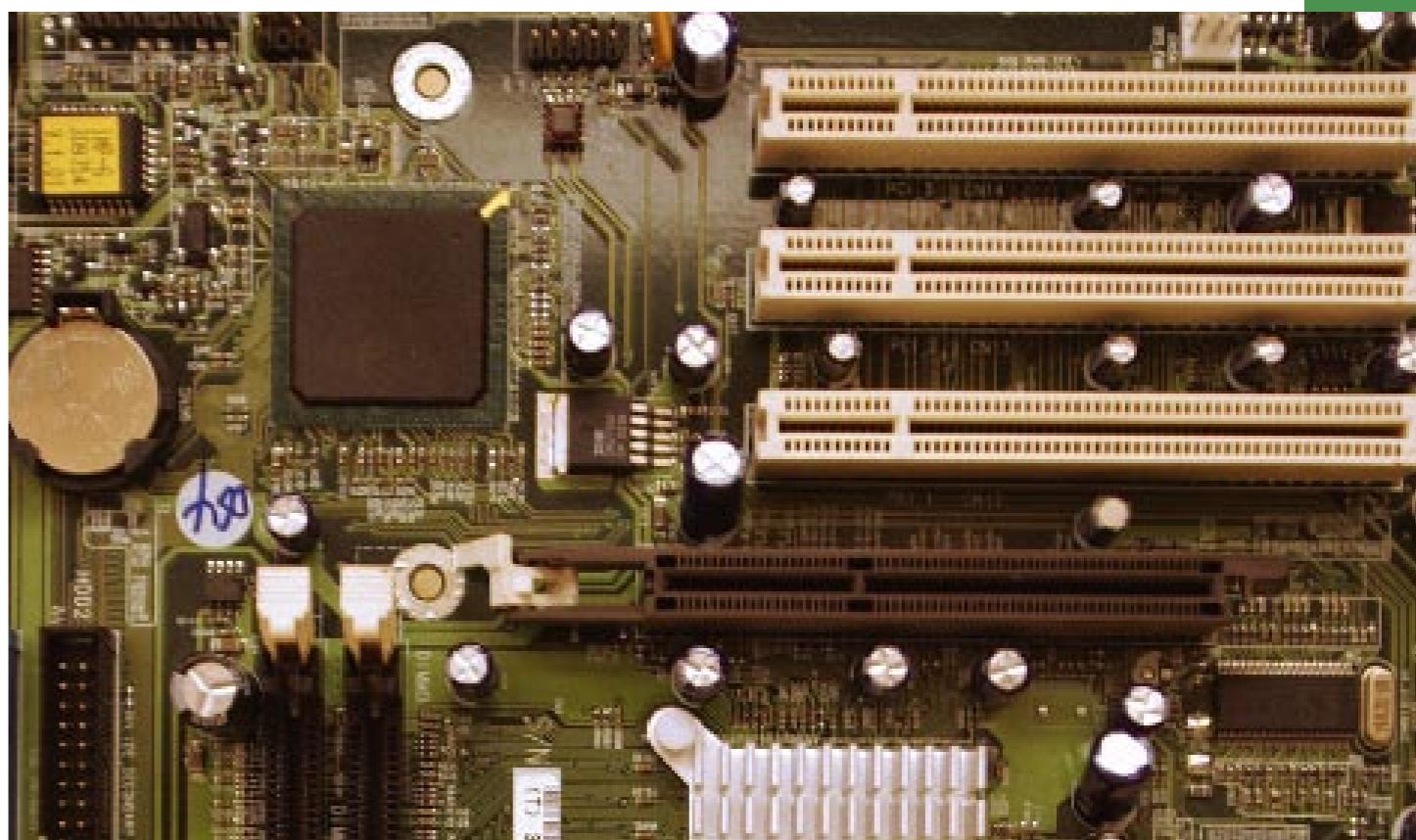
*Time-Bound Measurable Targets:* Put in place and implement an initiative aimed at facilitating and promoting Rwanda the regional hub for on-line banking and financial services 2007

*Planned Action Implementation Agency:* Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives

*Status:* Work in progress.

#### P6.4

*Plan-Specific Actions:* Implement a Program to facilitate electronic (on-line) inter-bank transaction within the Commercial Banking System and between the Central Bank of Rwanda and the Commercial Banks



*Prerequisites:* The setting up of an inter-bank computer network linking the computer systems of the Commercial Banks and that of the Central Bank of Rwanda

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Facilitate the implementation of inter-bank transactions on-line by the fourth quarter of 2006

*Planned Action Implementation Agency:* The National Bank of Rwanda The Commercial Banks and Financial Institutions

*Status:* Work in progress.

#### PRS-7: Special Initiatives to Facilitate the Rapid Development of an Export-Oriented Software Services and Product Development Industry

Program Ownership	Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To promote the development and expansion of the service sector into a highly competitive value-added sector with the potential develop into a business service-hub of the region. To promote and facilitate the role of the private sector in the development of the ICT industry and service sector.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To promote the development of the Rwanda Software Products and Services industry To facilitate the development of a competitive export-driven software industry To tap into the world wide multi-million dollar off-shore software development industry To develop a competitive ISO standard local software development industry To facilitate an investor-friendly enabling environment to attract quality investments into the local Software Industry</li> </ul>

#### P7.1

*Plan-Specific Actions:* Implement a Program to set up a Software Certification Agency (SCA) to monitor and enforce quality assurance in the software industry. The Federation of Rwandan Private Sector is to be a key stakeholder in the setting up and of this Agency.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives in collaboration with the Private Sector Federation and the National Standards Board to set up the Software Certification Agency by the second quarter of 2008 Initiate a process for developing and popularizing on the international market a Rwandan Brand for Quality Software Products and Services by 2010

*Planned Action Implementation Agency:* Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives The Rwanda Bureau of Standards The Private Sector Federation

*Status:* Work to start.

#### P7.2

*Plan-Specific Actions:* Ministry of Education to implement an initiative aimed at encouraging the universities and colleges to develop and offer special degree programs targeted at producing Software Development oriented Applied Mathematics Graduates

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Initiative to train Software Development oriented Applied Mathematics Graduates at the country's universities and colleges to begin by 2007

*Planned Action Implementation Agency:* Ministry of Education universities and colleges

*Status:* Work in progress.

#### P7.3

*Plan-Specific Actions:* I Implement a Program to enact enforceable copyright and Intellectual Property Rights laws directed at encouraging the inflow of Software Development related foreign direct investment (FDI) by International Software Houses and Computer Companies into Rwanda.

*Prerequisites:* None

*Planned Action Linkages:* L2.3

*Time-Bound Measurable Targets:* Enact enforceable copyright and Intellectual Property Rights laws to attract Software Development related foreign direct investment (FDI) by 2008

*Planned Action Implementation Agency:* Ministry of Justice and Institutional Relations The Parliament

*Status:* Work to start.

#### P7.4

*Plan-Specific Actions:* Implement an initiative aim at attracting at least 5 Fortune 500 companies to out-source computer services and software development in Rwanda by 2005

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* RIEPA to put in place and implement an initiative to attract at least 5 Fortune 500 companies to out-source computer services and software development in Rwanda by 2008

*Planned Action Implementation Agency:* RIEPA

*Status:* Work to start.

#### P7.5

*Plan-Specific Actions:* Program to encourage the Local Banks to extend working capital to Software Development companies, STPs and other top-end computer service-providers.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The Commercial Banks to set up a Special Business Loan Schemes targeted at Software Development companies, STPs and other top-end computer service providers by the second quarter of 2007

*Planned Action Implementation Agency:* The Commercial Banks Operating in Rwanda

*Status:* Work to start.

#### P7.6

*Plan-Specific Actions:* The Young IT Entrepreneurs (YITE) Business Support Scheme

*Prerequisites:* None

*Planned Action Linkages:* P7.5, P8.1, H11.2

*Time-Bound Measurable Targets:* Set-up the YITE Business Support Scheme by the second quarter of 2007. Note: The YITE Scheme is to be set up by the Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives with the involvement of the local Commercial Banks and Micro-Finance Agencies

*Planned Action Implementation Agency:* Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives The Commercial Banks Operating in Rwanda

*Status:* Work to start.

#### P7.7

*Plan-Specific Actions:* Initiative to encourage Export-oriented Software Development Companies and STPs to spend at least 20-25% of their total budget on training and software productivity and quality tools. Note: The Ministry of Finance and Economic Planning to facilitate this initiative by introducing an incentive package within which expenditure on training and software productivity and quality tools by qualified Software Companies and STPs are tax deductible.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Finance and Economic Planning to implement special tax instruments and incentive packages in the 2007/2008, Budget (and subsequent Budgets within the time frame of

NICI-2010) to make expenditure on training and software productivity and quality tools by qualified Software Companies tax deductible.

*Planned Action Implementation Agency:* Micro-Finance Agencies Ministry of Finance and Economic Planning

#### P7.8

*Plan-Specific Actions:* Program to allow STPs and other companies involve in developing software for the Export market to utilize part of their export earnings for re-investment to improve their regional and global competitiveness.

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Finance and Economic Planning to implement special tax instruments and incentive packages in the 2007/2008, Budget (and subsequent Budgets within the time frame of NICI-2010) to make export earnings use for re-investment by STPs and other Software Companies tax deductible.

*Planned Action Implementation Agency:* Ministry of Finance and Economic Planning

*Status:* Work to start.

#### PRS-8: Business and Career Development Support Services Initiative

Program Ownership	Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To promote the development and expansion of the service sector into a highly competitive value-added sector with the potential develop into a business service-hub of the region. To promote and facilitate the role of the private sector in the development of the ICT industry and service sector</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To promote the development of Business Support Services targeted at SMEs. To support business career development among the youth and the out-of-work</li> </ul>



#### P8.1

*Plan-Specific Actions:* Set-up Career and Business Development Advisory Centers (CABDACs)

*Prerequisites:* None

*Planned Action Linkages:* P7.6

*Time-Bound Measurable Targets:* Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives in collaboration with the Private Sector Federation to commission a report for setting up CABDACs by the fourth quarter of 2006. Set up pilot CABDACs in selected Prefectures by the third quarter of 2007

*Planned Action Implementation Agency:* Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives in Collaboration with the private sector

*Status:* Work to start.

#### P8.2

*Plan-Specific Actions:* An initiative to develop and in put in place an ICT Policy Advisory and Facilitation Team within the Private Sector Federation

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The Private Sector Federation to implement an initiative to put in place an ICT Policy Advisory and Facilitation Team within the Federation by the fourth quarter 2006

*Planned Action Implementation Agency:* The Private Sector Federation

*Status:* Work to start.

#### P8.3

*Plan-Specific Actions:* The Private Sector Federation to Organize regular ICT Briefing Sessions and Meetings for its members on developments within the local ICT industry, and the possible impact of policies and plans within the sector

*Prerequisites:* The setting up of the ICT Policy Advisory and Facilitation Team within the Private Sector Federation

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The Private Sector Federation to organize regular ICT-Industry Briefings and Meetings for its members during the time frame of NICI-2010

*Planned Action Implementation Agency:* The Private Sector Federation

*Status:* Work in progress.

#### P9.1

*Plan-Specific Actions:* Commission a Report on the establishment of a Foundation for Military Engagement in Commerce (FMEC) to serve as a National Agency for promoting and facilitating the involvement of serving, retired and demobilize military personnel as well as military establishments, organizations and associations in commercial ventures

*Planned Action Implementation Agency:* Ministry of Defense and National Security

*Status:* Work to start.

#### P9.2

*Plan-Specific Actions:* Implement an initiative to set up Army Business Co-operatives (ABCs) and Army Business Entities (ABEs) to engage in business and commercial activities in all sectors of the economy. Note: The ABCs and ABEs will operate under the auspices of FMEC and will be involve in the agriculture sector (ABCs and ABEs in Agriculture); the ICT industry (ABCs and ABEs in the ICT industry); cottage industry (ABCs and ABEs in the cottage industry); and in the service sector (ABCs and ABEs in the service sector, including the ICT service sector).

*Planned Action Implementation Agency:* Ministry of Defense and National Security, Interested Military Personnel with assistance from FMEC

*Status:* Work to start.

**P9.3**

**Plan-Specific Actions:** Set up a Military Fund for Entrepreneurship (MFE) under the auspices of FMEC to serve as a Special Fund to provide seed money, grants, start-up capital, and loans to ABCs, ABEs and other qualified military personnel and organizations to facilitate their involvement in commercial ventures

**Planned Action Implementation Agency:** Ministry of Defense and National Security and FMEC

**Status:** Work to start.

**P9.4**

**Plan-Specific Actions:** FMEC to develop on a pilot basis a number of ICT-related businesses ventures to kick-start the setting up of ABCs and ABEs in ICTs. *Note:* Candidate areas to begin with include: operating local commercial radio stations, assembling of computers and other ICT equipment and devices for the local and regional market; provision of ranges of ICT services targeted at the service sector and the cottage industry; providing human resource development and training services in ICT, management and other related areas etc

**Planned Action Implementation Agency:** FMEC

**Status:** Work to start.

**FDI-1: The Foreign Direct Investment (FDI) Promotion Study Initiative**

Program Ownership	RIEPA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To create the condition for attracting foreign investment and joint ventures to support the development of the local ICT industry To facilitate the mobilization of the necessary financial and other technological resources through Foreign Direct Investment (FDI) and Domestic investment to aid the socio-economic development process in Rwanda.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To carryout a comprehensive study to establish Rwanda's potential and capacity to attract foreign direct investment to develop and expand the local ICT service sector and industry To implement specific recommendations as to how best Rwanda can tackle and overcome barriers to attracting FDI and specifically promote Rwanda as a regional destination for ICT Foreign Direct Investment</li> </ul>

**F1.1**

**Plan-Specific Actions:** FDI Study-1: Commission a Study to evaluate Rwanda's capacity and potential to attract FDI in ICTs and other key areas.

**Prerequisites:** None

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** RIEPA to commission and complete the FDI Study-1 by the fourth quarter of 2006

**Planned Action Implementation Agency:** RIEPA

**Status:** Work in progress.

**F1.2**

**Plan-Specific Actions:** FDI Study-2: Commission a Report to draw on the findings of FDI Study-1 to make specific recommendations as to how best Rwanda can tackle and overcome the identified barriers to attracting FDI and specifically promote Rwanda as a regional destination for ICT Foreign Direct Investment

**Prerequisites:** The Report of FDI Study-1

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** RIEPA to commission and complete the FDI Study-2 Report by early second quarter of 2007

**Planned Action Implementation Agency:** RIEPA

**Status**

Work in progress.

**F1.3**

**Plan-Specific Actions:** Implement the Recommendations of FDI Study-2

**Prerequisites:** The Report of FDI Study-2

**Planned Action Linkages:** None

**Time-Bound Measurable Targets:** RIEPA in collaboration with relevant Public and private sector agencies to implement the recommendations of the FDI Study- 2 Report by the fourth quarter of 2007

**Planned Action Implementation Agency:** RIEPA in collaboration with relevant public and private sector agencies

**Status:** Work to start.

**FDI-2: Export Processing and Free Zone (EPfZ) Initiatives Targeted at Both Domestic and Foreign ICT Producers and Service Providers**

Program Ownership	Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To facilitate the development of the service sector into the business service-hub of the region through the deployment and exploitation of ICTs</li> <li>To support the development and the growth of the ICT industry to facilitate the production, distribution and provision of ICT products, goods and services</li> <li>To promote and facilitate the role of the private sector in the development and participation in the ICT industry and service sector.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To promote the development a competitive ICT export sector with the active participation of local producers and service providers.</li> <li>To support the private sector in the development and production of ICT products and services for the domestic market and for export</li> <li>To promote, encourage and facilitate the active participation of foreign investors in the local ICT industry and service sector and in the development the ICT export sector</li> <li>To promote joint ventures between local and foreign companies to facilitate the rapid development of the ICT industry and service sector</li> <li>To develop the local software development and ICT service provision sector</li> <li>To develop the local computer hardware assembly, repair and maintenance industry</li> <li>To encourage the creation of quality jobs in ICT-related areas</li> <li>To actively promote foreign investment in the ICT industry and service sector to speed up the process of job creation and knowledge transfer.</li> </ul>

**F2.1**

**Plan-Specific Actions:** Develop a comprehensive fast-track program for the creation of location-independent Export Processing and Free Zones (EPfZs) through-out the country targeted at the development, production, distribution and provision of ICT products, goods and services mainly for the export market

**Prerequisites:** None

**Plan-Action Linkages:** None

**Time-Bound Measurable Targets:** Develop a comprehensive fast-track program for the creation of EPfZs for ICTs by the fourth quarter of 2008

**Planned Action Implementation Agency:** Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives and Rwanda Investment Promotion Authority (RIEPA)

**Status:** Work to start.

**F2.2**

**Plan-Specific Actions:** Develop and implement specific incentive programs (tax holidays, investment incentives, grants, loans etc) targeted at encouraging the participation of local businesses and institutions in the EPfZs

*Prerequisites:* None

*Plan-Action Linkages:* None

*Time-Bound Measurable Targets:* Implement in the 2007/2008 Budget and other subsequent Budgets (within NICI-2010 time frame) special EPfZ promotion incentive programs targeted at the domestic investor

*Plan-Action Implementation Agency:* Ministry of Finance and Economic Planning

*Status:* Work to start.

#### F2.3

*Plan-Specific Actions:* Develop and implement specially targeted incentive packages (grants to SMEs) to promote the development of ICT products within the EPfZs for the export market

*Prerequisites:* None

*Plan-Action Linkages:* None

*Time-Bound Measurable Targets:* Implement in the 2007/2008 Budget and other subsequent Budgets (within NICI-2010 time frame) special EPfZ promotion incentive programs (grants to SMEs) targeted encouraging ICT production for export

*Plan-Action Implementation Agency:* Ministry of Finance and Economic Planning

*Status:* Work to start.

#### F2.4

*Plan-Specific Actions:* Develop and implement specific incentive programs (tax holidays, investment incentives, grants, loans etc) to attract world-class ICT companies to operate in the EPfZs

*Prerequisites:* None

*Plan-Action Linkages:* None

*Time-Bound Measurable Targets:* Implement in the 2007/2008 Budget and other subsequent Budgets (within the NICI-2010 time frame) special EPfZ promotion incentive to attract world-class computer companies. Target to attract at least one major computer company per year to set up a regional base in Rwanda during the time frame of NICI-2010. Target to attract a number of smaller and medium-sized computer companies per year during the time frame of NICI-2010

*Plan-Action Implementation Agency:* Ministry of Finance and Economic Planning Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives and Rwanda Investment Promotion Authority (RIEPA)

*Status:* Work to start.

#### F2.5

*Plan-Specific Actions:* Mount a national publicity drive and public awareness campaign to promote and sell the Rwandan EPfZ for ICTs Program locally and in the sub-region through the electronic and print media and trade magazines.

*Prerequisites:* None

*Plan-Action Linkages:* None

*Time-Bound Measurable Targets:* Implement an initiative to publicize the Rwandan 'EPfZ for ICTs' Program locally and the sub-regional market by the second quarter of 2007.

*Plan-Action Implementation Agency:* Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives and The Rwanda Investment Promotion Authority (RIEPA)

*Status:* Work to start.

#### F2.6

*Plan-Specific Actions:* Promote and market the Rwandan 'EPfZ for ICTs' Program internationally on the Web, at Trade Fairs, Foreign Mission and in the international mass media

*Prerequisites:* None

*Plan-Action Linkages:* None

*Time-Bound Measurable Targets:* Develop and implement an initiative to extensively publicize and market the Rwandan 'EPfZ for ICTs' Program internationally by the second quarter of 2007.

*Plan-Action Implementation Agency:* Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives and The Rwanda Investment Promotion Authority (RIEPA)

*Status:* Work to start.

#### FDI-3: Initiative to Promote Rwanda as a Competitive Destination for FDI in ICTs

**Program Ownership** RIEPA

**Policy-Relevant Strategic Goals**

- To create the condition for attracting foreign investment and joint ventures to support the development of the local ICT industry
- To facilitating the mobilization of the necessary financial and other technological resources through Foreign Direct Investment (FDI) and Domestic investment to aid the socio-economic development process in Rwanda.

**Program-Specific Goals**

- To promote internationally foreign direct investment opportunities in Rwanda
- To promote Rwanda as a suitable regional hub for ICT-enabled Services

#### F3.1

*Plan-Specific Actions:* RIEPA in collaboration with Ministry of Foreign Affairs to launch and implement an initiative to promote software development and other Export Processing and Free Zones (EPfZs) opportunities in Rwanda via the Rwanda Foreign and Trade Missions

*Prerequisites:* None

*Plan-Action Linkages:* F2.1

*Time-Bound Measurable Targets:* Launch initiative by the fourth quarter of 2006

*Plan-Action Implementation Agency:* RIEPA and Ministry of Foreign Affairs and Regional Cooperation

*Status:* Work to start.

#### F3.2

*Plan-Specific Actions:* Implement a Program to set up a special Trade Fair Promotion Division within RIEPA with special responsibilities for promoting investment opportunities and the EPfZ for ICTs initiative at international trade fairs and other trade and investment promotion meetings in the region and internationally

*Prerequisites:* None

*Plan-Action Linkages:* F5.5

*Time-Bound Measurable Targets:* Launch Program by the fourth quarter of 2006

*Plan-Action Implementation Agency:* RIEPA Private Sector Federation

*Status:* Work to start.



**F3.3**

**Plan-Specific Actions:** Launch an initiative aimed at positioning and promoting Rwanda as a regional hub for ICT-enabled Services

**Prerequisites:** None

**Plan-Action Linkages:** None

**Time-Bound Measurable Targets:** RIEPA to develop a proposal on how to implement this initiative by the fourth quarter of 2006 Implement initiative by 2007

**Plan-Action Implementation Agency:** RIEPA

**Status:** Work to start.

**Plan-Action Linkages:** None

**Time-Bound Measurable Targets:** Develop a program to facilitate conditions for investor friendly telecommunications environment by the first quarter of 2007 Implement program during NICI-2010 time frame

**Plan-Action Implementation Agency:** Rwandan Investment and Export Promotion Authority (RIEPA) Ministry of Infrastructure

**Status:** Work in progress.

#### FDI-4: Initiatives to Attract Foreign and Domestic Investment to Facilitate Rapid Infrastructure Development and Expansion

Program Ownership	Rwanda Investment Promotion Authority (RIEPA) and Ministry of Infrastructure
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To promote and facilitate modern physical infrastructure development, expansion and upgrade in areas like: roads and general utilities; social infrastructure; telecommunications and communication infrastructure.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To liberalize the telecommunications and communications sector to encourage investment and competition in the sector.</li> </ul>

**F4.1**

**Plan-Specific Actions:** Develop and implement a comprehensive program to promote domestic investment and attract foreign capital, and joint ventures to support the rapid development of the ICT infrastructure

**Prerequisites:** None

**Plan-Action Linkages:** None

**Time-Bound Measurable Targets:** Develop ICT infrastructure development investment promotion program by 2001 Promote and implement program throughout-out NICI-2010 time frame Target attracting US\$200 million domestic investment into ICT infrastructure development by 2008 Target attracting US\$700 million foreign investment into ICT infrastructure development by 2010

**Plan-Action Implementation Agency:** Rwandan Investment and Export Promotion Authority (RIEPA)

**Status:** Work to start.

**F4.2**

**Plan-Specific Actions:** Put in place a program to facilitate the process of rapid acquisition of licenses and authorizations to install and operate communication equipment and systems as well as for providing communication-related services

**Prerequisites:** None

**Plan-Action Linkages:** None

**Time-Bound Measurable Targets:** Develop a Rapid Response Program to facilitate the process of speeding up license acquisition and authorizations to install and operate communication equipment and systems as well as for providing communication-related services by the second quarter of 2007. Set up a Rapid Response and Service Unit (RRSU) within the Ministry of Transport, Public Works and Communication to facilitate the implementation of the program by the fourth quarter of 2007. Implement the program throughout the NICI-2010 time frame.

**Plan-Action Implementation Agency:** Ministry of Infrastructure in collaboration with RIEPA

**Status:** Work in progress.

**F4.3**

**Plan-Specific Actions:** Put in place and implement a program to facilitate conditions for an investor friendly telecommunications environment

**Prerequisites:** None

**F4.4**

**Plan-Specific Actions:** Develop and implement a program to facilitate the development of local communications industry towards competitiveness

**Prerequisites:** None

**Plan-Action Linkages:** None

**Time-Bound Measurable Targets:** Develop a comprehensive program to facilitate competition in the communications industry by the first quarter of 2007 Implement program during NICI-2010 time frame. Target achieving during the time frame of NICI-2010 an annual increase of at least 20% in the number of companies operating in each of the sectors of the industry

**Plan-Action Implementation Agency:** Ministry of Infrastructure Rwandan Investment and Export Promotion Authority (RIEPA)

**Status:** Work in progress.

#### FDI-5: Special Foreign Direct Investment (FDI) and Export Promotion Initiatives

Program Ownership	IEPA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To create the condition for attracting foreign investment and joint ventures to support the development of the local ICT industry</li> <li>To facilitate the mobilization of the necessary financial and other technological resources through Foreign Direct Investment (FDI) and Domestic investment to aid the socio-economic development process in Rwanda.</li> <li>To promote and facilitate trade and commerce</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To promote and facilitate investment and trade</li> <li>To develop Web-presence for the promotion and facilitation of investment, trade and exports</li> </ul>

**F5.1**

**Plan-Specific Actions:** Set-up the One-Stop Investment Facilitation Center. *Note:* This Center is to be set up at RIEPA Headquarters in Kigali to provide investment gateway services and other facilitation services to potential investors. The Center, which will eventually be linked to GovNet, will among other things serve as a one-stop shop for information on investment opportunities in Rwanda and for access to the various investments related services provided by Government Ministries and PSOs.

**Prerequisites:** None

**Plan-Action Linkages:** None

**Time-Bound Measurable Targets:** RIEPA to set up the One-Stop Investment Facilitation Center by the first quarter of 2007

**Plan-Action Implementation Agency:** RIEPA

**Status:** Work in progress.

**F5.2**

**Plan-Specific Actions:** Set-up a Virtual One-Stop Investment Promotion and Facilitation Site. *Note:* This Virtual One-Stop Investment Website is to be developed, hosted and maintained by the ITSD of RIEPA. It will provide the same services as the Physical One-Stop Investment Facilitation Center. It will serve an Investment Promotion Site as well as provide investment gateway services and facilitation services to potential investors on-line. It will

be possible for investors to access information on investment opportunities in Rwanda on this website and make inquiries for additional information and facilitation services via the site. This Virtual One-Stop Site is likely to serve as the first port of call for most potential foreign investors.

*Prerequisites:* None

*Plan-Action Linkages:* None

*Time-Bound Measurable Targets:* RIEPA to set up the Virtual One-Stop Investment Promotion and Facilitation Site on the Web by the first quarter of 2007. *Note:* The setting up of the Virtual One-Stop Investment Promotion and Facilitation Site will take priority over the setting up of the Physical One-Stop Investment Facilitation Center at RIEPA Headquarters.

*Plan-Action Implementation Agency:* RIEPA

*Status:* Work to start.

#### F5.5

*Plan-Specific Actions:* Set up the Virtual Trade Fair Site to promote Rwandan Products and Services on the Internet. *Note:* The Virtual Trade Fair Site is to be developed, hosted and maintained by the ITSD of RIEPA. It will serve as an on-line facility for promoting Rwandan goods and services on the Internet. Local Rwandan companies including SMEs from all sectors of the economy will be able to either link their websites to the Virtual Trade Fair Site or host a store-front at the site to promote their goods and services. In addition to promoting Rwandan goods and services, the site will also provide e-Commerce (business-to-consumer, business-to-business, and business-to-Government) and e-Trade facilitation services to Rwandan companies planning to do business on the Internet.

*Prerequisites:* None

*Plan-Action Linkages:* PSR-5

*Time-Bound Measurable Targets:* RIEPA in collaboration with the Ministry of Commerce, Industry and Tourism and the Private Sector Federation to set up the Virtual Trade Fair Site by the first quarter of 2007

*Plan-Action Implementation Agency:* RIEPA, Ministry of Commerce, Industry and Tourism, Private Sector Federation

#### F5.6

*Plan-Specific Actions:* Set up an Virtual Tourism Promotion and Facilitation Site. *Note:* The Virtual Tourism Promotion and Facilitation Website will be developed, hosted and maintained by the ITSD of ORTPN. This site (just like the TPIS as per C4.6) will provide on-line access to tourism information including details of tourist spots; game parks; hotels and lodges in various parts of the country; health information; travel information (air, road and lake) and other information that will be required to promote and facilitate tourism in Rwanda. The site will provide links to all Rwandan Hotel Websites as well as sites of other Tourist Facilitation Agencies. The site will also provide advance reservation and booking facilities for hotels, national park tours, car rental etc. It will also provide one-line facilities for making tourist visa applications to be forwarded to the Rwandan Immigration Service for processing.

*Prerequisites:* None

*Plan-Action Linkages:* C4.6

*Time-Bound Measurable Targets:* ORTPN to set up the Virtual Tourism Promotion and Facilitation Site by the first quarter of 2007

*Plan-Action Implementation Agency:* ORTPN

*Status:* Work to start.

#### PRIVATE SECTOR DEVELOPMENT SUB-PLAN: THE IMPLEMENTATION SCHEDULE OF THE PLANNED ACTIONS

Planned Actions	2006				2007				2008				2009				2010			
	Q1	Q2	Q3	Q4																
PSD-2.01																				
PSD-2.02																				
PSD-2.03																				
PSD-2.04																				
PSD-2.05																				
PSD-2.06																				
PSD-2.07																				
PSD-2.08																				
P2.1																				
P2.2																				
P2.3																				
P2.4																				
P2.5																				
P2.6																				
P3.1 (1)																				
P3.1 (2)																				
P3.1 (3)																				
P3.2																				
P3.3																				
P4.1																				
P4.2																				
P4.3																				
P5.1																				
P5.2																				
P5.3 (1)																				
P5.3 (2)																				
P5.3 (3)																				
P5.4																				
P6.1																				
P6.2																				
P6.3																				
P6.4																				
P7.1 (1)																				
P7.1 (2)																				
P7.2																				
P7.3																				
P7.4																				
P7.5																				
P7.6																				
P7.7																				
P7.8																				
P8.1 (1)																				
P8.1 (2)																				
P8.2																				
P8.3																				
F1.1																				
F1.2																				
F1.3																				
F2.1																				
F2.2																				
F2.3																				
F2.4 (1)																				
F2.4 (2)																				
F2.4 (3)																				
F2.5																				
F2.6																				
F3.1																				
F3.2																				
F3.3 (1)																				
P8.1 (2)																				

Planned Actions	2006				2007				2008				2009				2010			
	Q1	Q2	Q3	Q4																
F4.1 (2)																				
F4.1 (3)																				
F4.2 (1)																				
F4.2 (2)																				
F4.2 (3)																				
F4.3 (1)																				
F4.3 (2)																				
F4.4 (1)																				
F4.4 (2)																				
F5.1																				
F5.2																				
F5.5																				
F5.6																				

## MULTI-SECTORAL ECONOMIC DEVELOPMENT AND ICT-2020 POLICY IMPLICATIONS, AND RISK FACTORS OF THE SUB-PLAN

### Possible Contributions to the Realization of the GOR's Multi-Sectoral Economic Development Policy

The Planned Actions identified for implementation under this sub-plan will in the long term have a substantial impact on the development of the key sectors of the economy. A number of the Planned Actions are aimed at developing and facilitating the service sector with the aim to develop it into the ‘business service-hub’ of the region. Some of the Planned Actions are targeted at facilitating the development of the industrial sector including the ICT sub-sector and the cottage industry while a number are broadly targeted at aiding the agriculture sector. A number of the initiatives targeted at the ICT production sector are aimed at kick-starting and broadening the base of this sector and increasing its product range. In relation to the ICT service sector, a number of the initiatives of the sub-plan have the potential to support the growth of the sector and increasing its export capability. On the whole, since the Planned Actions of the sub-plan are aimed at the entire private sector which encompasses the agricultural sector, the service sector and the industrial sector the potential for contributing to the realization of the GOR’s multi-sectoral economic development policy is great.

### Areas of Emphasis as per the ICT-2020 Policy

The Planned Actions of the *Private Sector Development Sub-plan* will have implications for both the exploitation and production of ICTs. A number of the programs are specifically targeted at facilitating the deployment and exploitation of ICTs in the private sector while others are aimed at promoting the development and expansion of the local ICT production industry – targeting software and ICT systems development; hardware assembly, maintenance and servicing as well ICT service provision. On the whole, the Planned Actions of this sub-plan will contribute to the realization of the GOR’s policy goal aimed at simultaneously pursuing both ICT exploitation and production involving: the utilization and exploitation of ICTs to support the delivery of Government services and the activities of various sectors of the economy as well as the production, development and delivery of ICT products and services, i.e. towards the development and promotion of an ICT industry and service sector.

### Expectations for the Development of Rwanda's Information and Knowledge-based Society and Economy (IKE) Development Goals

It is anticipated that the implementation of the Planned Actions of the *e-Private Sector Development Sub-plan* will contribute to the process of the development of the Rwanda’s information society and economy – the ultimate goal of the Rwandan ICT-led development vision. In particular, it is envisaged that the implementation of the initiatives of this sub-plan will lead the achievement of the following Information and Knowledge Economy (IKE) goals:

- The development of a high-income economy dominated by trading in ICT products and services
- The development of an economy characterized by a large commercial services sector with a reasonably large and vibrant, ICT services sub-sector and industry

- The development of an economy characterized by a technology-based knowledge-driven industrial sector
- The development of an economy with a globally competitive industrial and services sector that is to a large extent driven by cutting-edge R&D activities
- The development of an economy based on a rich pool of highly skilled human resources in critical skill areas relevant for developing and maintaining a competitive edge on the global market
- The development of an economy in which the majority of the working population is either directly or indirectly involved in information and communications related activities
- The development of an economy characterized by a widespread deployment and exploitation of ICTs within the society to support the delivery of health, education, Government and social services
- The development of an economy in which a reasonable large proportion of the population have access to information and communications technology products and services
- The development of an economy in which the provision and delivery of goods and services of the key sectors of the economy are to a large extent facilitated by information and communications technologies
- The development of an economy based on an advanced and reliable national information and communications infrastructure

### The Risk Factors

A number of the Planned Actions of this sub-plan are aimed at facilitating the development of the private sector. The expectation is that, the private sector will be able to develop fast enough to aid the process of developing a regional competitive advantage in the area of ICT exploitation and production through the development of a competitive ICT industry and service sector. This process will boost the economy, generate quality jobs and assist in the process of wealth creation and national prosperity. The risk factor as per the implementation of the Planned Actions of this sub-plan arises in the situation where the expected boast in the economy did not materialize despite the efforts and resources targeted at facilitating the development of the private sector. For example, some of the initiatives like those aimed at facilitating the private sector through special tax policy instruments, incentive packages, and budgetary provisions do have high risk factors (in the case of a non-performing economy) measured in terms of the actual cost ('revenue-forgone') and opportunity cost of these Planned Actions. It is also anticipated that apart from boasting the economy, facilitating the development of the private sector will also generate additional demand for quality manpower in the medium and long term. This additional manpower requirement of a fast-growing private sector that will be met by the implementation of the *Human Capacity Development Sub-plan*. There is therefore that risk element, (measured in terms of the resources devoted to human resource development) in the event that the private sector failed to generate enough economic activity and by so doing failed to create quality jobs.

## THE SUB-PLAN FOR RURAL AND COMMUNITY ACCESS

### Summary of National Strategy and Policy Linkages of the Sub-plan

#### Relevant Vision for Rwanda (VfR) Mission Strategies

- To transform Rwanda into an IT-literate nation
- To promote and encourage the deployment and utilization of ICTs within the economy and society
- To facilitate the process of national reconciliation and reintegration by promoting social and cultural interaction within the society

#### Relevant Government Policy Commitments

##### *Commitment to an Integrated Development Policy Goal*

The Government of Rwanda (GOR) recognized the role that ICTs can play in accelerating the socio-economic development of Rwanda towards an information and knowledge economy. The GOR believes that Rwanda is equally placed to take advantage of these technologies to facilitate her socio-economic development process. The GOR acknowledges that in the new emerging economic order, the fundamental basis for wealth creation and national prosperity is information and knowledge and that Rwanda cannot afford to be without either of these. The GOR also recognizes that the information and knowledge economy is generating opportunities across all sectors in a number of developed and developing countries. It is a new source for the creation of quality jobs, wealth generation and redistribution, rapid economy development and prosperity as well as a source for facilitating global competitiveness. The GOR is wholeheartedly committed to the implementation of its integrated socio-economic and ICT Policy and strategies to facilitate the process of establishing a prosperous society, with an economy that is globally competitive, dynamic, robust and resilient in respect to the rapid changes and advances that will take place in the global economy, dominated by technology-driven information and knowledge economies. The Government is also committed to promoting the development of an economy in which the majority of the working population is either directly or indirectly involved in information and communications related activities.

##### *Commitment to Social, Cultural and Political Development of the Community*

The GOR, through its Vision for Rwanda (VfR), does not envisage the future of Rwanda only in economic-development terms; The Vision also acknowledges the need for Rwanda to develop politically, socially and culturally to foster: political stability, good governance and system of Government; improvement in the quality of life for of the people of Rwanda; national unity and reconciliation; social interaction, cohesion and integration; social justice; environmental protection and the fostering of cultural heritage in Rwanda. The Vision for Rwanda (VfR) also aims at enhancing the pride and confidence of the people of Rwanda in their abilities and capabilities develop Rwanda into a prosperous nation that is at peace with itself territorially and ethnically.

#### Relevant ICT4D Policy Expectations

- Promote widespread deployment and access to information and communication technologies and resources within the community in both the urban and rural areas of the country
- Contribute to the development and implementation of e-Government, e-Commerce and e-Education in Rwanda.

#### Policy Action Items

To implement its ICT4D policy intentions in the area of Rural and Community Access within the context of facilitating the development of the Rwanda information-rich and knowledge-based economy and society, the Government is committed to implementing specific Planned Actions targeted at achieving the objectives and goals of the following policy action items:

#### *Policy Action Item 1: Decentralize Services*

- Empower local authorities to make decisions.
- Empower local authorities to carry out all services traditionally executed by Central Government.
- Improve transport and communications to reach all areas.
- Ensure that all utilities are efficiently distributed to all areas.
- Encourage the private sector to decentralize its services by branching out to rural areas.
- Establish and maintain a universal service and access fund (USAf).

#### *Policy Action Item 2: Ensure that ICT is Pervasive in the Rural Areas*

- Facilitate the development and spread of public Information Access Points (IAPs) or kiosks.
- Facilitate the development and spread of Multipurpose Community Telecenters (MCTs).
- Encourage the spread of ICT to the homes.
- Encourage rural areas to use ICT through the promotion of its benefits via the various media: radio, TV and press.
- Provide wider access and connectivity to all.

#### *Policy Action Item 3: Foster Wealth Creation and Create Self-sustaining Communities*

- Provide the rural communities with the technology tools, training and resources to enable them to realize their greatest potential.
- Develop processes for micro-lending for the rural areas.
- Develop trading cooperatives where communities are the major shareholders.

#### *Policy Action Item 4: Empower Rural Women through Universal Access*

- Create an enabling environment that supports and encourages strategies to promote women's equal access to, and opportunity to benefit from, ICT projects.
- Develop content which speaks to women's concerns and reflects their local knowledge and which is of value for their daily lives, business enterprises, and family responsibilities.
- Include information on health, agriculture/small scale production, natural resources.
- Support increased representation of women and girls in scientific and technical education
- Use ICTs to promote increased participation of girls and women in education at all levels
- Promote increased employment in the IT sector for women.
- Implement e-Governance strategies which are accessible to women as well as creating a regulation and policy environment which supports women's use of ICTs.
- Involve rural women in ICT Policies.
- Promote media access to rural communities.

#### *Policy Action Item 5: Increase Employment in Rural Areas*

- Increase opportunities for rural areas to do business with main towns.
- Encourage the private sector to employ locally in the rural areas.
- Encourage local entrepreneurial activities.
- Improve efficiency of local business.
- Attract outside employers into the community.

#### *Policy Action Item 6: Increase Media Penetration into the Rural Areas*

- Provide wider access to different types of media by encouraging the increase in various types of broadcast, the specialization of such broadcast by region, and the variety of content to be broadcast.
- Use media to proliferate education
- Use media to disseminate information
- Use media to involve the rural areas in the country's governance and communal activities
- Use media to access disparate rural segments: the youth, women, the disabled, etc.

## PLANNED ACTIONS

### RCA-2.01: Telemedicine and e-Diagnosis Project

Type	Development Projects
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of C2.1, C2.2, C2.3 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	<p><b>C2.1:</b> The Ministry of Health to commission the development of a National Telemedicine Project Implementation Plan for Rwanda</p> <p><b>C2.2:</b> The Ministry of Health to facilitate the implementation of Telemedicine systems in a selected number of regional hospitals and community-based health centers</p> <p><b>C2.3:</b> Medical and Nursing Training Institutions to pilot Continuing Medical Education (CME) using the resources of Telemedicine systems</p>
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> On-line access and data transfer from/to other health centers and universities fully available</p> <p><i>Linkages:</i></p> <ul style="list-style-type: none"> <li>SOC-2.01: Health Drug Procurement and Tracking System</li> <li>SOC-2.03: Resource Management Portal for Major Diseases</li> <li>SOC-2.04: Integrated Health Management Information System</li> </ul>
Planned Action Due Date	Second quarter of 2007
Planned Action Ownership	Ministry of Health
Implementation Agencies	Ministry of Health in collaboration with: TRACNET; Hospitals and Health Centers

### Planned Action Details

#### Purpose:

Provide or support medical care using electronic communication and information technologies. Support includes diagnostic and treatment tools. Of special interest is the provision of such facilities for rural areas in Rwanda.

#### Description:

As a supplement to traditional patterns of care delivery, Telemedicine and e-Diagnosis encompass a wide range of applications from cooperative work of professionals sharing medical expertise, to home care systems. It cannot and should not replace traditional patient-professional contacts because face-to-face interpersonal contact between the health professional and the client has supportive properties that can be important for successful care. Thus, it can be used in hospitals to create networks of specialists and to improve access by care practitioners to specialists, to improve the quality of diagnostics and treatment. Collaborative programs of practice-based initiatives may streamline intake, improve communication, reduce gaps in referrals and services and reduce duplicate information collection among providers. This can be achieved by enhancing the flow of information between primary care and home care.

The facilities provided by Telemedicine and e-Diagnosis are:

- Accelerate diagnosis and treatment
- Easy tools for communication and information posting/sharing
- Enhance flow of information between primary care and home care
- Multi-networking interfaces to quickly respond to users' need
- Professional call center for service delivery and follow-up
- Access to Knowledge-based database

#### Benefits of the Planned Action:

The implementation of Telemedicine and e-Diagnosis tools will strengthen the primary health care system by ensuring that better diagnosis and treatment is brought closer to the patients, especially in remote areas

#### Current and On-going Work:

Telemedicine project at King Faycal Hospital and e-Health work by Partners in Health in some rural health facilities. Work done by TRACNet project.

#### Budgetary Estimate:

Category D (between US\$800,000 and US\$1,000,000)

#### Schedule:

Phase 1: Analysis and design of the Telemedicine and e-Diagnosis tools

Phase 2: Develop a distributed and integrated system

Phase 3: Prototype Planned Action at decentralized centers

### RCA-2.02: The Agrobus Project

Type	Material Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i></p> <ul style="list-style-type: none"> <li>• To use existing Research Center in the MINAGRI</li> <li>• To define the number of buses needed over a period of 3 years so that most of Rwandan rural areas would be covered.</li> </ul> <p><i>Linkages:</i></p> <ul style="list-style-type: none"> <li>RCA-2.04: Multipurpose Community Telecenters</li> <li>ECD-2.02: Agricultural Commodity Information Exchange</li> <li>ECD-2-04: Agricultural Management Information System</li> </ul>
Planned Action Due Date	Fourth quarter of 2010
Planned Action Ownership	Ministry of Lands, Environment, Forestry, Water and Natural Resources
Implementation Agencies	Ministry of Lands, Environment, Forestry, Water and Natural Resources

### Planned Action Details

#### Purpose:

To provide much needed and mobile extension services to farmers

#### Description:

The AgroBus is a vehicle that visits farms and farmers on a regular basis. The bus would be equipped with the necessary tools and communication facilities to provide farmers with immediate feedback when possible and delayed feedback when necessary. The AgroBus would provide the following services and facilities:

- The ability to present multimedia presentations on various issues such as agricultural practices, new tools and technologies, environmental practices, etc.
- The application of agricultural tests that can be transmitted back to research centers or to early warning systems.
- Other data can also be collected such as water resources information, environmental concerns, crops planted, type of chemicals used, etc.
- The bus can be used to distribute printed information as in many situations farmers would not have electronic access.

- The personnel in the bus would be agricultural experts that can assist farmers and resolve their problems through hands on assessment of problems.
- The bus can be used to distribute samples for planting, fertilizing, etc.

This extension service would work closely with Agricultural Research Centers to provide analysis and advice to farmers. On the other hand, the extension services would also serve as a data collection venue for the Ministry of Agriculture.

The Planned Action can also provide some of the services of the Multipurpose Community Telecenters such as access to the web, e-mail, faxing, educational material, etc. The information available through the Commodity Exchange Planned Action will also be made available.

#### *Benefits of the Planned Action:*

- The AgroBus would take the place of a Multipurpose Community TeleCenter
- Farmer would have direct answers to their queries or problems
- Links between farmers and research centers would help Rwanda understand its agricultural strengths and weaknesses.

#### *Risks:*

- Lack of funding
- Improper technical skills
- Farmers lack of confidence and credibility in the AgroBus

#### *Budgetary Estimate:*

Category E (between US\$1 million and US\$3 million)

#### *Schedule:*

Phase 1: Acquire and equip the buses while training the relevant personnel. Initially, a set of ten buses would be acquired. This number would be increased on a yearly basis depending on the required spread in the rural areas (four months)

Phase 2: Prepare the material to be provided by the buses (in parallel with phase 1)

Phase 3: Launch the AgroBus through proper promotional campaigns.

#### RCA-2.03: Early Warning System

Type	Development Projects
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of C4.9, C4.10 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	C4.9: National Food Security and Early Warning Information System (FEWIS) C4.10: The Environmental Monitoring Information System (ENIS)
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Lands, Environment, Forestry, Water and Natural Resources
Implementation Agencies	Ministry of Lands, Environment, Forestry, Water and Natural Resources

#### Planned Action Details

##### *Purpose:*

To establish an entity that controls and monitors the Early Warning System. The main aim of an Early Warning System is to monitor critical indicators, analyze them and channel warning information in the fastest possible time to the right person/entity so that the proper decisions can be taken.

**Description:** What is an Early Warning System? It is a system designed to provide advance warning of critical situations. The system must be capable of providing such warnings in sufficient time to allow for proper correction actions (or responses). The system must also have the following characteristics:

- It must be affordable
- The data it collects must be verifiable
- It must be able to provide a minimum of false or unreliable warnings
- It must have wide applicability covering a large number of potential threats (see below)
- It must be robust, i.e. it needs to be operational at all times and in all areas of Rwanda

##### *Uses of an Early Warning System:*

Many Governments have started setting up Early Warning Systems (Early Warning System) for specific areas that are of direct concern to their countries. The results have always been good. However, there is a need to coordinate between different systems.

Currently, the following areas are usually addressed by Early Warning Systems:

- Health
- Weather
- Food and Agriculture
- Geophysical events
- Environment

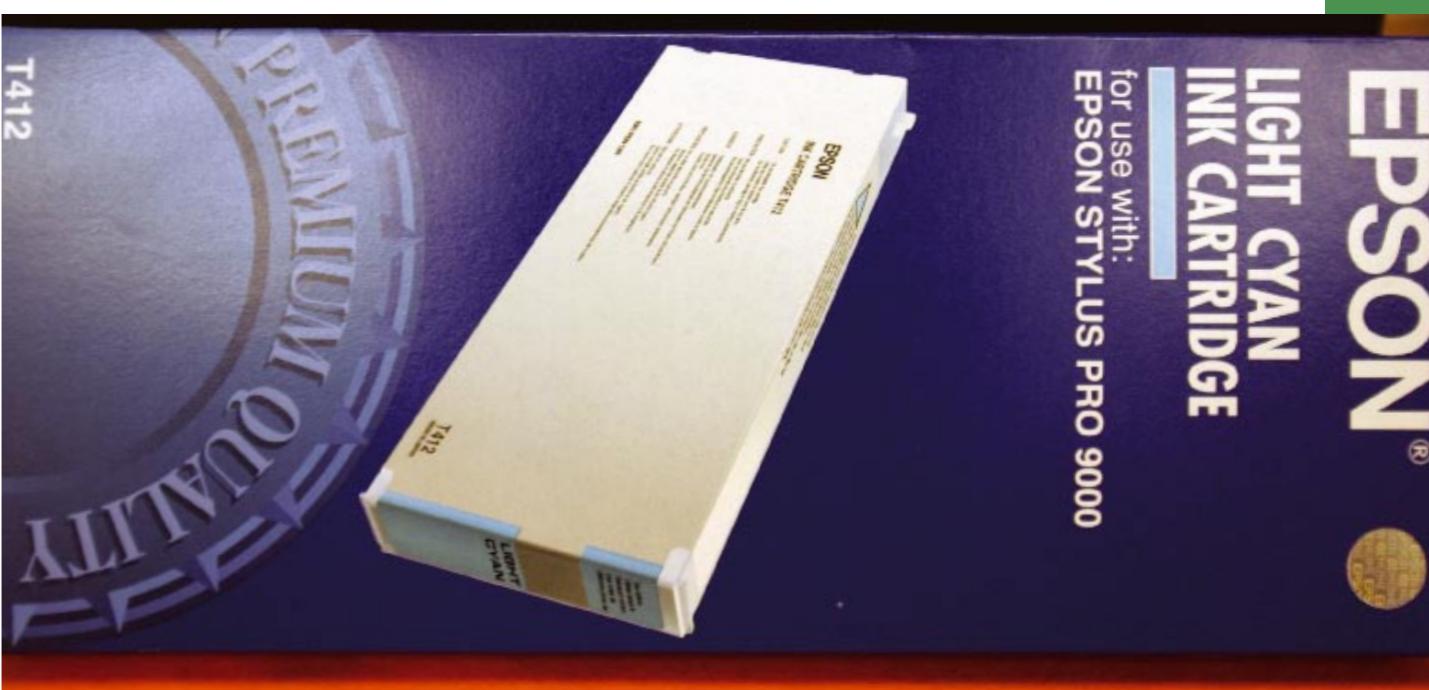
Examples of main threats are:

- Spread of human epidemics
- Climatic disasters: cyclones, floods
- Geophysical disasters: landslides, earthquakes
- Environmental disasters: contamination, pollution
- Agricultural events: livestock epidemics, droughts, seasonal events
- Food: national shortages, famine

##### *Components of an Early Warning System*

The components of an Early Warning System cover the following functionalities:

- Monitoring of various indicators
- Analytic tools that allow the system to correlate forecast and analyze indicators.
- Institutional arrangements for reacting and responding to critical situations.



- Response mechanisms.

*Benefits of the Planned Action:*

- To reduce loss of life
- Reduction in damage costs
- Better planning of strategic national resources such as drugs and food

*Current and On-going Work:*

No current work is under way in Rwanda. However, there are international systems that collect information and feedback such information to the countries subscribed to such services. As an example, the FEWS (Food Early Warning System) implemented by USAID is in use in several countries in the region.

*Budgetary Estimate:*

D (Between US\$800,000 and US\$1,000,000)

#### RCA-2.04: Multipurpose Community Telecenters (MCTs)

Type	Hardware Projects
Relevant NICI-2005 Plan Roll-over Planned Actions and Initiatives	<p><b>This Planned Action is an aspect of C1.1, C1.2, C1.3 and C1.4 of the NICI-2005 Plan</b></p> <p><b>C1.1:</b> Commission the development of a National Multipurpose Community TeleCenter (MCT) Project Report detailing the project plan and other implementation and funding issues</p> <p><b>C1.2:</b> The Ministry of Local Government, Good Governance, Community Development and Social Affairs to set up Multipurpose Community Telecenters in selected Communes throughout the Country</p> <p><b>C1.3:</b> The Ministry of Lands, Environment, Forestry, Water and Mines to set up MCTs in a selected number of existing and new Villages to be set up under the Villagization Program</p> <p><b>C1.4:</b> The Ministry of Gender and Women in Development to set up MCTs in Women Centers throughout the country</p>
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i> RCA-2.05: Free Information Access Points</p>
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	Ministry of Local Administration, Community Development and Social Affairs
Implementation Agencies	Ministry of Local Administration, Community Development and Social Affairs in collaboration with: National Civil Society Platform; Ministry of Infrastructure; Ministry of Youth, Sport and Culture and Telecom Operators

#### Planned Action Details

*Purpose:*

To establish a large number of community centers available to all citizens. These would be more densely distributed in the rural areas and the urban areas having low-income strata. They will have a variety of electronic and non-electronic services supported and available at no charge to the citizens.

*Description:*

The area of Rwanda is 26,300 square kilometers. It is estimated that around 94% of its population is spread out in rural areas. There is a large number of “divides” between such areas and the main towns in Rwanda. It becomes crucial for the socio-economic development of Rwanda to involve such areas in the modern workings of the nation.

To do that, they must have access to a variety of technologies and communication modes. These would not be possible at the individual levels. It therefore follows that Multipurpose Community Telecenters (MCTs) need to be established in such remote areas. (These are also referred to as Community Learning and Communications Centers).

MCTs have proved their worth in various countries around the world, more so in countries where there is a wide digital divide than in more developed countries. Citizens living in remote areas in Rwanda would be underprivileged in such situations:

- Traveling to complete transactions
- Accessing information
- Getting educated via ICTs

Providing an MCT in most small towns and villages would redress this situation. MCTs can be owned by the community or shared with Public Sector agencies. They can be of several different formats often customized to suit the requirements of particular communities.

The concept of the MCT is one of a communal location, often housed in a separate flat or hall. Municipalities, schools or public libraries could be their host. A typical MCT would consist of the following:

- A Server machine
- From four to ten PCs, depending on the needs of the particular location
- Various software products
- Internet access
- A supervisor who can handle most queries, assist in the use of the center and communicate the needs of the citizens to the owners of the project
- A basic library and documentation center

The following services could be provided in a typical MCT:

- Access to telecommunications services: fax, telephones and e-mail.
- Internet access.
- ICT-literacy training.
- e-Government services through Citizen Information Offices consisting of direct or Web-based access to Public Sector information and transactions. Citizens can then complete full or part procedures on-line in the presence of the MCT personnel.
- Supply of various Government forms and procedure guides (Manual or Web-based).
- Consolidated one-stop access to all sites of relevance to the community (Mostly proposed as separate Planned Actions).
- Video/TV established for educational and training material.
- Publishing the communities' own information on-line: job opportunities, events, achievements, news, public announcements.
- Connecting cooperatives with their target markets and suppliers.
- Distance or e-Learning.
- Distance health care.
- Small and micro-enterprise support.
- e-Commerce link to wider markets.
- Provide market information for farmers and local cottage industries.
- Link to Business Development Service Centers being developed by the Rwanda Private Sector Federation (RPSF)
- Participation in the political process through election campaigns, Government news and publications.
- The use of the centers for collaborative projects between schools and the community.

*Benefits of the Planned Action:*

These services provide a foundation for the empowerment of rural citizens, as well as numerous economic opportunities. MCTs also improve literacy and speed up social and economic development. Finally, they serve to remove various divides: digital, educational, income and opportunities.

**Current and On-going Work:**

Telecenters by Rwandatel and development agencies (UNIFEM, Nyarutarama, SDC, Kibuye, etc)

The Distance Training Program of the Kigali Institute of Education (KIE) has launched centers in ten areas: Nyundo, Rubengera, Butare, Gihundwe, Rwamagana, Musanze, Kabgayi, LDK, Byumba and Nyamagabe

**Risks**

The following are some critical success factors for MCTs:

- Secure Government and private sector subsidies
- Incorporate Telecenters into a comprehensive economic and rural development strategy that includes investment in complementary sectors.
- Target youth for ICT training, since they are quick learners with the longest productivity horizon. (Schools can either serve as community learning centers).
- Encourage communities to take the initiative and be responsible for maintaining community information systems.
- Staff to be trained to help visitors become familiar with the technologies, resources and services offered at the Telecenters
- To ensure long-term sustainability, fee and management structures can be established based on the ability to pay.

There are many challenges to this Planned Action such as funding, training of staff, sustainability of result and the encouragement of the use of the MCTs. However, given the number of challenges they resolve, they are a key step towards bridging the digital divide, reducing poverty, improving the democratic process, reducing urban migration, increasing literacy and empowering the citizen.

**Budgetary Estimate:**

Category G (between US\$5 million and US\$9 million)

**Schedule:**

Depending on the number of MCTs to be developed, the broad schedule can be:

Phase 1: Develop a needs assessment survey (2 to 3 months)

Phase 2: Definition of the structure and contents of a typical MCT. (1 month)

Phase 3: Development of a scheme that defines the location of MCTs. Prioritization of implementation should be based on sound criteria to be defined during this phase. The final output would be a phased list of locations where MCTs can be established.



**Phase 4:** Funding and start with the acquisition of products and content. Supervisors need to be trained and given the responsibility of handling MCTs. This is an on-going phase. It is expected that around 10 MCTs can be implemented in the first 6 months.

**RCA-2.05: Free Information Access Points**

Type	Hardware Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Third quarter 2007
Planned Action Ownership	Ministry of Local Administration, Community Development and Social Affairs
Implementation Agencies	Ministry of Local Administration, Community Development and Social Affairs in collaboration with: National Civil Society Platform; Ministry of Infrastructure; Ministry of Youth, Sport and Culture and Telecom Operators

**Planned Action Details****Purpose:**

To provide free Information Access Points (IAPs) throughout the country

**Description:**

It should be conceivable that Internet free access points are a public service in the same way that public phones are. The Internet access points are either totally free of charge or charged on a nominal hourly rate that should be lower than the rate already established by Internet cafes. The charge will cover telephone, network and ISP usage.

This service should be differentiated from Multipurpose Community Telecenters, which provide a wider range of facilities to the citizen. IAPs should be available in a larger set of outlets every Rwandan village and in each neighborhood in cities:

- Multipurpose Community Telecenters
- Municipalities
- Post offices
- Public or private libraries
- Universities and high schools

Free Information Access Points are a necessary requirement for the spread of ICT and the Internet throughout society. Furthermore, these would be a Prerequisite for the citizens to take advantage of the ICT programs and portals being implemented under other initiatives such as e-Government, unemployment bank, distance learning, etc.

The usage of the free Information Access Points will determine their future need and expansion rates.

**Current and On-going Work:**

UNDP/Ministry of Infrastructure project for PIKs

**Budgetary Estimate:**

Category D (between US\$800,000 and US\$1,000,000)

RCA-2.06: Text to Audio – Kinyarwanda Talkster	
Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> Adoption of Intellectual Property rights and associated laws in Rwanda</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Second quarter of 2008
Planned Action Ownership	Rwanda ICT Association
Implementation Agencies	Rwanda ICT Association in collaboration with RITA and the private sector

#### Planned Action Details

##### Purpose:

To develop a reader that converts Kinyarwanda text into voice. This would be useful as a reader to those who have reading challenges: illiteracy, blind or the aged.

##### Description:

English has a large number of software applications that allow a reader to import text into the application whereupon the application would read the text aloud. Voice pitch, gender and speed can be selected.

The main benefit of such a software application has been to allow those incapable of reading to access literature, training material or other reading matter. Such persons can be the illiterate, the blind, those that are physically handicapped and cannot hold books or access them, etc.

Kinyarwanda is not available for such readers. Developing such a reader would be an incentive to any innovative software developer. Two benefits would result: encouraging advanced software development and providing this segment of the population with access to reading matter.

##### Budgetary Estimate:

Category C (between US\$500,000 and US\$800,000)

RCA-2.07: Establish Data Entry and Transcription Centers	
Type	Hardware Projects
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of C3.1 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	C3.1: Initiative to set up Public Data Processing Centers (PDPCs)
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i></p> <p>RCA-2.04: Multipurpose Community Telecenters</p>
Planned Action Due Date	Second quarter of 2007
Planned Action Ownership	Private Sector Federation
Implementation Agencies	Private Sector Federation in collaboration with: National Civil Society Platform and Ministry of Local Administration, Community Development and Social Affairs

#### Planned Action Details

##### Purpose:

To position Rwanda as a regional data entry center and provide income-generating activities mostly for the poor

##### Description:

This Planned Action proposes to establish data entry centers in rural areas of Rwanda. Such areas are usually beset by poverty and urban migration. However, since such areas do not have mastery for languages, such a Planned Action would be most successful in regions in and around towns where such languages as English and French are known. A number of countries, namely India and Sri Lanka, have become data entry center for big corporations around the world. Rwanda is positioned very well to profit from such an opportunity at the regional level especially with French and English speaking countries.

Data entry centers can be established in rural areas with relatively cheap overheads and salaries. People can be recruited and trained to perform simple data entry tasks and would be supervised by quality control staff. The mechanism is the following:

Step 1: Create centers comprising of several PCs and a server. Additional units such as scanners or printers can be introduced when needed. A supervisor will control the work.



Step 2: A workforce can be recruited from the region. Focus would be unemployed women. Work can be carried out on a flexi-time basis. These will be trained and given the chance to work on a part-time or a full-time basis.

Step 3: Workers can book time in the center and complete the scheduled work.

The benefits of the Planned Action are many:

- Increase work in rural areas
- Export
- Increase ICT literacy
- Improve the status of women
- Reduce urban migration

#### *Budgetary Estimate:*

Category C (between US\$500,000 and US\$800,000)

#### RCA-2.08: Low Income Family PC Kit

Type	Hardware Projects
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of C3.2 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	C3.2: Special Schemes to Promote PC Penetration into the Community
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Local Government
Implementation Agencies	Ministry of Local Government

#### Planned Action Details

##### *Purpose:*

To provide family PC kits that will bridge the digital divide within the country and encourage the use of ICT technologies by low-income families

##### *Description:*

The project will distribute a PC kit made up of a Personal Computer, printer, UPS and a free Internet subscription for one year.

The project will first determine the pre-set income level of the household that may benefit from the program. Then the project will determine the total number of toolkits that will be distributed through the program. Finally, the project will decide on the allocation of the toolkits throughout Rwanda with priority given to remote rural areas.

In order to qualify for the program, a household must go through the following procedure:

- Apply by writing a statement explaining the need for or the intended usage of the kit.
- Two members of the household must attend the ICT basic skills training planned for by the program. One of the two attending must be the father or the mother. The two must show interest and have a good attendance record to the ICT training. The training will include instructions on the assembly and installation of the PC kit at home.
- The training will also cover such home PC usages as: correspondence, home economics, using the Internet, health issues, chatting and communications.

The project will select the recipients of the toolkit based on their needs, their performance in the training session, and the area in which they live.

Three other projects are related to this project:

- The combating of various types of illiteracy through the development of CBT and e-Learning applications.
- It can also be linked to the project that channels second-hand equipment.
- Finally, it can be linked to the project that coordinates ICT donations.

The above will partly alleviate the main challenges of this project, namely funding and the sustainability. Furthermore, PCs and their software will need to be updated.

#### *Budgetary Estimate:*

Category H (between US\$9 million and US\$15 million)

#### RCA-2.09: Make Rural Telephony Network Accessible and Affordable

Type	Development Projects
Relevant NICI-2005 Plan	This Planned Action corresponds to I2.5 of the NICI-2005 Plan
Roll-over Planned Actions and Initiatives	I2.5: Develop and implement a comprehensive program for rural roll-out of telecommunication and communication infrastructure and services
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> The necessary communications licenses and regulatory framework should be in place. <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Licensed telecommunications operators
Implementation Agencies	Artel, MTN Rwanda, Terracom, Tuvugane

#### Planned Action Details

##### *Purpose:*

To provide affordable access to telephony in the rural areas.

##### *Description:*

The Planned Action aims at providing telephone networks through different technology platforms. These should include GSM, CDMA, VSAT, optical fiber and microwave backhaul. The main purpose is to make such a facility available and affordable in rural areas where communications are currently not accessible. This Planned Action would hence be the backbone of many others for the rural areas such as Multipurpose Community Telecenters.

##### *Benefits of the Planned Action:*

Easier and affordable access to telephony services for social and economic development in the rural areas. This is almost a Prerequisite for other Planned Actions.

##### *Current and On-going Work:*

Expansion of the GSM and VSAT networks and introduction of CDMA and fiber optic network.

##### *Ownership:*

Licensed telecommunications operators

##### *Risks:*

Insufficient funding of the infrastructure and international bandwidth.

#### *Budgetary Estimate:*

Category G (Between US\$5 million and US\$9 million)

## PLANNED ACTIONS ROLLED OVER FROM THE NICI-2005 PLAN

### CMN-1: The National Multipurpose Community TeleCenter (MCT) Project

Program Ownership	RITA
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To bring Government closer to the people To facilitate Government decentralization and villagization policy To support the administrative and service delivery activities and operations of central and local Government units</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To set up Multipurpose Community Telecenters (MCTs) in a number of towns and cities, including sites where the villagization program has been implemented to provide community-based ICT-related services including Internet cafe services to the public at large.</li> <li>To facilitate public access to the Internet and community-based access to Government information and services. To spread the use of ICTs and the Internet in the community.</li> </ul>

#### C1.1

*Plan-Specific Actions:* Commission the development of a National Multipurpose Community TeleCenter (MCT) Project Report detailing the project plan and other implementation and funding issues

*Prerequisites:* None

*Planned Action Linkages:* None

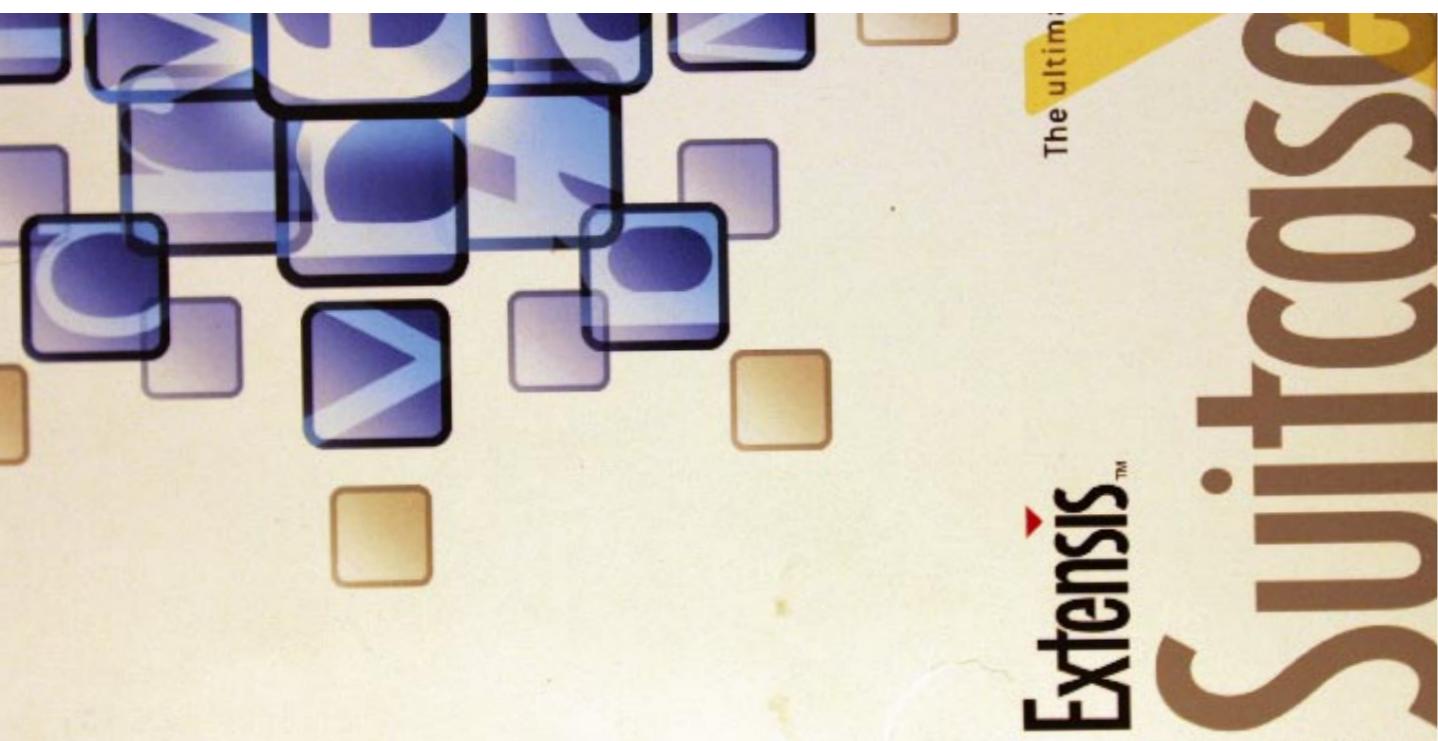
*Time-Bound Measurable Targets:* The National MCT Project implementation Plan to be commissioned and completed by the fourth quarter of 2006

*Planned Action Implementation Agency:* Ministry of Local Government, and Social Affairs in collaboration with other Project Implementation Ministries

*Status:* Work in progress.

#### C1.2

*Plan-Specific Actions:* The Ministry of Local Government, Good Governance, Community Development and Social Affairs to set up Multipurpose Community Telecenters in selected Communes throughout the Country



*Prerequisites:* An MCT Project Implementation Plan for the Ministry of Local Government, Urban Development and Social Affairs

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Establish at least ten MCTs per Prefecture by the fourth quarter of 2007. Double the number of MCTs per Prefecture by the fourth quarter of 2008

*Planned Action Implementation Agency:* Ministry of Local Government, and Social Affairs

*Status:* Work to start.

#### C1.3

*Plan-Specific Actions:* The Ministry of Lands, Environment, Forestry, Water and Mines to set up MCTs in a selected number of existing and new villages to be set up under the Villagization Program

*Prerequisites:* An MCT Project Implementation Plan for the Ministry of Lands, Settlements and Environmental Protection

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* A selected number of existing Villagization Program villages with basic facilities like electricity and telephone access should be equipped with an MCT by 2007. All villages created under the Villagization program should be equipped with MCTs by the second quarter of 2008.

*Planned Action Implementation Agency:* Ministry of Lands, Environment, Forestry, Water and Mines

*Status:* Work to start.

#### C1.4

*Plan-Specific Actions:* The Ministry of Gender and Women in Development to set up MCTs in Women Centers throughout the country

*Prerequisites:* An MCT Project Implementation Plan for the Ministry of Gender and Women in Development

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Implement MCTs in existing women's centers in key prefectures by 2007 Implement MCTs in women's centers in all Prefectures by 2008

*Planned Action Implementation Agency:* Ministry of Gender and Women in Development

*Status:* Work in progress.

### CMN-2: The National Telemedicine Project

Program Ownership	Ministry of Health
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To facilitate administrative and service delivery cost reduction and the improvement in productivity within of the health delivery system To modernize the operations of the health delivery system</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To establish telemedicine systems in a number of rural and urban hospitals and community health centers to demonstrate the use of ICTs to support health delivery and community-based medical education and training. To support medical research in the Medical schools and Teaching Hospitals To facilitate access by Hospitals and Medical schools to medical information, documents and research material on a global scale via the Internet To deploy and utilize ICTs in the fight against HIV/AIDS in Rwanda</li> </ul>

#### C2.1

*Plan-Specific Actions:* *Planned Action Implementation Agency:* The Ministry of Health to commission the development of a National Telemedicine Project Implementation Plan for Rwanda

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The Ministry of Health to commission and complete the National Telemedicine Project implementation framework and plan by the fourth quarter of 2006.

*Planned Action Implementation Agency:* Ministry of Health

*Status:* Work to start.

#### C2.2

*Plan-Specific Actions:* The Ministry of Health to facilitate the implementation of Telemedicine systems in a selected number of regional hospitals and community-based health centers.

*Prerequisites:* A Telemedicine Project Implementation Plan for the Ministry of Health

*Planned Action Linkages:* None.

*Time-Bound Measurable Targets:* Implement Telemedicine systems in 50% of regional hospitals and community-based health centers by 2007. Double the number of medical establishments implementing Telemedicine systems in the country 2008.

*Planned Action Implementation Agency:* Ministry of Health

*Status:* Work in progress.

#### C2.3

*Plan-Specific Actions:* Medical and nursing training institutions to pilot Continuing Medical Education (CME) using the resources of Telemedicine systems



*Prerequisites:* A Telemedicine Project Implementation Plan for the Ministry of Health

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Implement Telemedicine-assisted CME in the majority of medical and nursing training establishments by 2010.

*Planned Action Implementation Agency:* Ministry of Health

*Status:* Work in progress.

#### CMN-6: Special Programs and Initiatives to Facilitate the Active Involvement of Women in ICTs

Program Ownership	Ministry of Gender and Women Development
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To facilitate the improvement in the quality of life for of the people of Rwanda including those of women and their dependants</li> <li>To generate employment and economic opportunities for women and facilitate their full involvement the Nation's socio-economic development process</li> <li>To facilitate and ensure the future role of women in the emerging information and knowledge economy and society.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To increase the enrolment of girls in science and technology programs, especially in ICT-related programs at the universities and colleges</li> <li>To create opportunities to facilitate the active involvement of women in the ICT service and sector and industry.</li> <li>To improve the representation of women in ICT-related professions and in top level management positions within the ICT sector</li> </ul>

#### C6.1

*Plan-Specific Actions:* Initiatives to increase the enrolment of women in ICT-related educational and training program in the universities and colleges

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Education, in collaboration with the Ministry of Gender and universities, to commission a report on how best to increase the enrolment of girls in ICT-related programs in the higher institutions of learning by the fourth quarter of 2006. All universities and colleges to implement an admission policy targeted at ICT-related programs that favors women by 2007

*Planned Action Implementation Agency:* Ministry of Education Ministry of Gender and Women in Development, universities and colleges

*Status:* Work in progress.

#### C6.2

*Plan-Specific Actions:* Initiatives to increase the representation of women in the ICT-related professions

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The Ministry of Public Service, Skills Development and Labor and the PSOs to by 2007 put in place and implement an ICT staff recruitment and promotion policy that will encourage women to embarked on an ICT-related career within the civil and public service. The Ministry of Public Service, Skills Development and Labor to by fourth quarter of 2006 issue a directive that obliges the Ministries and PSOs to ensure that women are given the same chance to embarked on and avail of ICT training and skill update programs and opportunities. The Private Sector Federation to encourage its members to take steps to facilitate a fair representation of women on their ICT-related technical and managerial staff.

*Planned Action Implementation Agency:* Ministry of Public Service, Skills Development and Labor and The Private Sector Federation

*Status:* Work in progress.

**C6.3**

*Plan-Specific Actions:* Program to facilitate the active involvement of women in the ICT service sector and industry

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* The Ministry of Gender and Women in Development to by fourth quarter of 2006 put in place and implement a public awareness campaign aimed at encouraging women to actively get involved in the ICT service sector and industry Ministry of Gender and Women in Development in collaboration with the local Banks, the Donor Agencies and Micro Finance Support Organization to by 2007 set up a Micro-finance and loan scheme to assist women organization and individual women to embark on ICT service sector/industry related business ventures

*Planned Action Implementation Agency:* Ministry of Gender and Women in Development

*Status:* Work in progress.

**C6.4**

*Plan-Specific Actions:* Initiatives to increase the number of women in management positions in the ICT Service sector and Industry

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Gender and Women in Development to by 2007 put in place and implement a special initiative targeted at lobbying the private sector to facilitate the representation of women in management positions in their respective organizations. Ministry of Gender and Women in Development to by 2007 institute a Presidential Award to be awarded by the President to the organization or company that best promotes the career advancement of women in ICTs. Ministry of Gender and Women Development to by 2007 institute an annual Presidential Award to be awarded by the President to the top woman ICT Executive.

*Planned Action Implementation Agency:* Ministry of Gender and Women in Development

*Status:* Work in progress.

**C6.5**

*Plan-Specific Actions:* Initiatives to encourage girls to undertake science and technology education and training programs

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Ministry of Education to by the fourth quarter of 2006 develop and put in place a comprehensive policy and guidelines for promoting and facilitating the enrolment of girls in science and technology education and training programs throughout the Rwandan school system. The universities and colleges to by the fourth quarter of 2006 to put in place and implement policies aimed at increasing (on an annual basis) the enrolment of female students on science and technology programs. Ministry of Education to by 2007 put in place an initiative to increase the number of female science and technical teachers in the primary, secondary, vocational and technical schools. The Ministry of Education to by 2007 institute an annual scholarship program aimed at needy but bright girls who want to embark on science and technology education at the school level, or at the university and college level. Ministry of Gender and Women in Development to by 2007 institute annual Presidential Awards to be awarded by the President to: (i) the Best Female Science Student in each Prefecture at the Secondary School Leaving Certificate Examinations. (ii) Best Female Science and Technology student from each of the Science and Technology Faculties.

*Planned Action Implementation Agency:* Ministry of Education, universities and colleges, Ministry of Education

*Status:* Work in progress.

### RURAL AND COMMUNITY ACCESS SUB-PLAN: THE IMPLEMENTATION SCHEDULE OF THE PLANNED ACTIONS

Planned Actions	2006				2007				2008				2009				2010			
	Q1	Q2	Q3	Q4																
RCA-2.01																				
RCA-2.02																				
RCA-2.03																				
RCA-2.04																				
RCA-2.05																				
RCA-2.06																				
RCA-2.07																				
RCA-2.08																				
RCA-2.09																				
C1.1																				
C1.2 (1)																				
C1.2 (2)																				
C1.3 (1)																				
C1.3 (2)																				
C1.4 (1)																				
C1.4 (2)																				
C2.1																				
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C2.3																				
C6.1 (1)																				
C6.1 (2)																				
C6.2 (1)																				
C6.2 (2)																				
C6.3 (1)																				
C6.3 (2)																				
C6.4																				
C6.5 (1)																				
C6.5 (2)																				

### MULTI-SECTORAL ECONOMIC DEVELOPMENT AND ICT-2020 POLICY IMPLICATIONS, AND RISK FACTORS OF THE SUB-PLAN

Possible Contributions to the Realization of the GOR's Multi-Sectoral Economic Development Policy

A number of the Planned Actions identified for implementation under this sub-plan will in broad terms contribute to the development of key sectors of the economy. Specifically the implementation of a number of the special initiatives designed for facilitating rapid deployment and exploitation of ICTs within the communities (including rural communities) will indirectly contribute to the development of the services sector. Also, a number of computer-based information system implementation initiatives targeted at the delivery of community-based Government services, will apart from having a direct impact on improving the delivery of Government Services, will in the long-run have impact on the development of key target sectors like the services and the industrial sectors of the economy. The Agriculture sector modernization process is also likely to be facilitated by the implementation of some of the rural development and community access Planned Actions. Briefly, the implementation of the Planned Actions of this sub-plan has the potential to contribute to the realization of the GOR's multi-sectoral economic development policy.

#### Areas of Emphasis as per the ICT-2020 Policy

The majority of the Planned Actions of this sub-plan are targeted at facilitating the deployment, exploitation and utilization of ICTs within the community. It is possible that some of the Planned Actions will, in the long-term,

indirectly contribute towards developing the local ICT production and service provision sector of the economy by way of generating demand for ICT products and services. The sub-plan for the Rural and Community Access will therefore contribute to the realization of the GOR's policy goal to simultaneously pursue both ICT exploitation and production policy involving; the utilization and exploitation of ICTs to support the delivery of Government services and the activities of various sectors of the economy as well as the production, development and delivery of ICT products and services, i.e. towards the development and promotion of an ICT industry and service sector.

#### **Expectations for the Development of Rwanda's Information and Knowledge-based Society and Economy (IKE) Development Goals**

It is anticipated that the implementation of the Planned Actions of the *Rural and Community Access Sub-plan* will contribute to the process of the development of the Rwanda's information society and economy – the ultimate goal of the Rwandan ICT-led development vision. In particular, it is envisaged that the implementation of the initiatives of this sub-plan will lead the achievement of the following Information and Knowledge Economy (IKE) goals:

- The development of an economy in which the majority of the working population is either directly or indirectly involved in information and communications related activities
- The development of an economy with a modern, efficient and competitive agricultural sector
- The development of an economy characterized by a widespread deployment and exploitation of ICTs within the society to support the delivery of health, education, Government and social services
- The development of an economy characterized by a modern educational system within which ICTs are widely deployed to facilitate the delivery of educational services
- The development of an economy in which the provision and delivery of services by Government and its administrative machinery are to a large extent facilitated by information and communications technologies
- The development of an economy based on an advanced and reliable national information and communications infrastructure
- The development of an economy based on a literate society with a high proportion of computer literates.

#### **The Risk Factors**

A number of the Planned Actions identified for implementation under this sub-plan relate to the development of computer-based systems. The development and maintenance of these systems will require a reasonable investment in technological and human resources. Given that these resources could be found to develop these systems, the risk of their under-utilization may arise if procedures are not put in place for their proper deployment and usage. In some cases, the under-utilization risk could be amplified if the user-community does not embrace the system for one reason or another. Another area of risk may arise in situations where key Planned Actions are not implemented. A number of these Planned Actions are targeted at implementing some of the key computer-based applications, information and database systems to support the community-based administrative and service delivery activities of Government Ministries and some of the PSOs. Implementing the *Sub-Plan for e-Government and e-Governance* without implementing some of the key components of this Sub-Plan may lead to the risk of not fully exploiting the ICT resources and the facilities deployed by the Ministries and the PSOs. Also not implementing a number of the key Planned Actions of this sub-plan could result in excluding a large section of Rwandans from having access to ICTs. This could adversely impact on the demand for ICT services and products which may in the long run constrain the development and expansion of the local ICT service and production sector thus making it difficult to realize the goal of developing Rwanda into the service-hub of the sub-region.

## **THE SUB-PLAN FOR LEGAL, REGULATORY AND INSTITUTIONAL PROVISIONS AND STANDARDS**

### **Summary of National Strategy and Policy Linkages of the Sub-plan**

#### **Relevant Vision for Rwanda (VfR) Mission Strategies:**

To develop the legal, institutional and regulatory framework and structures required for supporting the deployment and utilization of ICTs within the economy and society.

#### **Relevant Government Policy Commitments:**

##### *Commitment to Enabling Legal, Regulatory and Institutional Provisions*

The GOR acknowledges that: the development and the exploitation of ICTs in the economy and society as well as the development of the information and knowledge economy will need to be supported and facilitated by appropriate legal provisions and legislation; regulatory framework and provisions as well as institutional structures.

The Government is committed to the enactment of the necessary laws and legislation in areas like: Intellectual Property Law; Telecommunication Law – to govern and regulate the activities of the telecommunication sector and in passing the necessary legislation to facilitate electronic commerce and other Internet-related activities in the country.

##### *Commitment to the Setting up of National ICT Structures and Bodies*

The GOR is committed to setting up the necessary National ICT Structures and Bodies to coordinate, support and facilitate the implementation of its ICT Policies, Strategies and Plans.

##### *Commitment to Facilitating and Encouraging the Adoption of Standards, Best Practices and Guidelines for ICT Deployment and Exploitation*

The GOR acknowledges that the deployment, exploitation and the development of ICTs in Rwanda will need to be guided by appropriate Standards, Best Practices and Guidelines. The GOR is therefore committed to facilitating this process

#### **Relevant ICT4D Policy Expectations:**

- Support the creation of the necessary enabling environment to facilitate the deployment, utilization and exploitation of ICTs within the economy and society
- Facilitate the development of a local ICT industry to facilitate the production, manufacturing, development, delivering, and distribution of ICT products and services
- Support the development of the national information and communications infrastructure
- Contribute to the development and implementation of e-Commerce in Rwanda
- Support the development of the legal, institutional and regulatory framework and structures required for supporting the deployment, utilization and the development of ICTs within the economy and society and the economy
- Facilitate the development and promotion of the necessary standards practices and guidelines to support the deployment and exploitation of ICTs within the society and economy
- Promote widespread deployment and access to information and communication technologies and resources within the community in both the urban and rural areas of the country
- Contribute to the development and implementation of e-Government, e-Commerce and e-Education in

## Rwanda

### Policy Action Items

To implement its ICT4D policy intentions in the area of the Legal, Regulatory and Institutional Provisions and Standards within the context of facilitating the development of the Rwanda information and knowledge-based economy and society, the Government is committed to implementing specific Planned Actions targeted at achieving the objectives and goals of the following policy action items:

#### *Policy Action Item 1: Develop the Proper ICT Legal Framework*

- Support existing efforts to modernize laws related to ICT.
- Ensure that laws and regulations are speedily advanced through their life cycle.
- Ensure that laws are predictable.
- Ensure that laws are not restrictive. They should not generate further controls and regulations. A Knowledge-based Economy (KBE) is based on openness and liberalization.
- Laws should address a variety of ICT-related issues as presented in the e-Readiness Assessment document.
- Support all efforts that harmonize, modernize and update the relevant laws and regulations.

#### *Policy Action Item 2: Implement ICT Standards and Guidelines*

- Define standards that apply to products to be purchased and ensure that as the technology changes, such standards are updated on a regular basis.
- Develop standards and guidelines for such practices as project management, quality management, software development, data exchange, etc.
- Develop guidelines for acquisition of ICT products and services in terms of procurement practices: tendering, contracting, certifying, etc.
- Develop standards for issues such as confidentiality, security, data integrity and disaster recovery.
- Ensure that products and services follow international standards.
- Ensure that the standards and guidelines are properly implemented through monitoring and evaluation.

#### *Policy Action Item 3: Strengthen the Regulatory and Coordinating Authorities and Implementing Agencies (RITA, RURA, etc)*

- Define and clarify the mission of each of these entities.
- Ensure that the roles and responsibilities of all such entities are clear and well understood.
- Ensure that relationships with the relevant Ministries are also clear and well understood.
- Empower the entities within their scope to make them more agile and responsive.
- Ensure that such entities have sufficient resources to carry out their mission.

#### *Policy Action Item 4: Make the Judiciary System More Agile*

- Automate the judiciary processes.
- Encourage the collection of legal data and its dissemination (rules, regulations, gazettes, decrees, court cases, legal entities and services, etc).
- Simplify and disseminate legal information to the citizen to improve transparency and accountability.
- Develop predictable legal frameworks that prevent multiple interpretations.
- Create partnerships between the Judiciary and other sectors to ensure that they serve each other well.

### PLANNED ACTIONS

#### LRI-2.01: On-line Access to Laws and Regulations

Type	Data Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> Clear any restrictions on the electronic publication of the Gazette or any other laws <i>Linkages:</i> LRI.202: Justice Sector Information System
Time-Bound Target: Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Justice
Implementation Agencies	Ministry of Justice in collaboration with the Parliament; All Ministries and Agencies; Rwanda Utilities Regulatory Agency and RITA

#### Planned Action Details

##### *Purpose:*

To make available to the public all Rwanda laws and regulations as well as the Official Gazette on-line as well as through other media

##### *Description:*

Various parties in Rwanda issue laws and regulations. There is the official constitution. The Parliament issues new laws and regulations. The Official Gazette is issued by the Office of the Prime Minister. There could be other decrees issued by Ministers and directors of various agencies.

It is important that the public have direct and simple access to this public domain knowledge. Currently, the information is dispersed and hard to access. Access to it is through expensive legal counsel. The legal profession



itself has difficult when researching such information. Both the Public Sector and companies in the private sector all require direct access to such information.

The size of the historical set of documentation is now so large that searching for laws, regulations and other announcements can be very time consuming and may lead to errors and omissions.

This Planned Action proposes the setting up of the full set of laws and regulations as well as the Official Gazette on a special website. This website would provide a powerful multi-lingual search engine. It would also present the laws and regulations through keywords for linked searches.

This Planned Action would also provide such material in other forms such as CDs.

*Benefits of the Planned Action:*

- To provide transparency when all laws and regulations and other official announcements can be made available to a wider audience in Rwanda
- To assist foreign investors or entities that need to deal with Rwanda in having direct access to relevant information and knowledge of the legal and official systems in Rwanda

*Current and On-going Work:*

The Gazette is being produced in print form. No electronic form is available.

*Risks:*

That the website will be established and not utilized

*Budgetary Estimate:*

Category C (between US\$500,000 and US\$800,000)

*Schedule:*

Phase 1: Entry of the data in its primary language (French) into a comprehensive database. (Six months/eight-person full-time team)

Phase 2: Development of the website to include a sophisticated search engine. (6 months)

*Description:*

CRIJIS will have a public interface component to facilitate access to the non-confidential information sections of the system, which is of public interest. Access will be via GovNet nodes, and other public access points and centers like: Telecenters, Public Information Kiosks (PIKs) etc.

CRIJIS will host among other things, electronic documentation of the details relating to: the Rwandan legal system; the administration of justice; the operations of the Courts including the cases, the records, proceedings, charges, verdicts, sentences and the people involved: the prosecution and defense team, plaintiffs and the defendants etc.

The judiciary knowledge base included in CRIJIS should contain the following:

- All laws and regulations in Rwanda
- The Official Gazette of the Government
- A history of all cases and their details
- A list of all parties involved in the legal system: lawyers, judges, public attorneys, etc.

*Benefits of the Planned Action:*

- Easy access to laws and regulations.
- Contribution to creating a more informed citizen which leads to democratic governance
- Transparency

*Current and On-going Work:*

The Gacaca Information Network and Parquet General System

*Risks:*

To be effective this Planned Action requires an extensive network around the country.

*Budgetary Estimate:*

Category D (Between US\$800,000 and US\$1,000,000)

**LRI-2.02: Automate the Criminal Justice Information System (CRIJIS)**

Type	Development Projects
Relevant NICI-2005 Plan	<b>This Planned Action is equivalent to C4.1 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	C4.1: Criminal Justice Information System (CRIJIS)
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> GOV-2.09: The National IDs Project
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	Ministry of Justice
Implementation Agencies	Ministry of Justice in collaboration with Gacaca; Parquet General; Travaux d'Interets General; Ministry of Interior

**Planned Action Details**

*Purpose:*

CRIJIS is to serve as a comprehensive computer-based information and database system on all aspects relating to the administration, operations and the activities of the Criminal Justice and Legal System of Rwanda.

**LRI-2.03: Develop a Legal Framework for ICT**

Type	Consulting Projects
Relevant NICI-2005 Plan	<b>This Planned action is an aspect of L2.3 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	L2.3: Implement a program to enact the necessary cyber laws to support e-Commerce and other Internet-related activities. Some of the cyber laws to enact include: (i) Legislation for the Prevention of computer crimes (ii) Laws relating to Security including Digital Signatures, Cryptography and Encryption etc (iii) Copyright and Intellectual Property Right Laws (iv) Electronic Government Legislation (v) Laws relating to Privacy of data, etc. and (vi) Freedom of Access to Information Laws
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> Government should first do a study on harmonizing all existing statutes and mandates (Presidential Decrees, Cabinet Decisions, Various Laws including Telecom, Establishing of RITA/RURA and other Ministerial Orders, etc) <i>Linkages:</i> Most e Commerce Planned Actions
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	Ministry of Justice
Implementation Agencies	Ministry of Justice in collaboration with the Parliament; RITA and the Private Sector Federation



### Planned Action Details

#### *Purpose:*

To develop the necessary legal framework for ICT processes so that all current stumbling blocks can be alleviated and all legal requirements necessitated by new and emerging technologies can be set up to ensure proper adoption of ICT.

#### *Description:*

Modern law is based on the assumption that every action is based on a physical, personal and time dimension. Modern law is based on centralization of Government and its monopoly and control over its own territory.

These assumptions have been challenged by ICT. For a start, there are cross border transactions and activities uncontrollable by Government. Secondly, the personal dimension has been removed. Computers can produce transactions by intention or error. The source is often untraceable.

The (Internet) domain registration is not a legalized process so no verification of owners is made. The time dimension is irrelevant and sometimes untraceable. The physical dimension has been replaced by the electronic dimension: information can be duplicated and modified with ease.

Internet law is still unclear. It is no more a matter of modifying existing laws to suit a new situation. A paradigm shift in the legal concept of Internet law is required. New concepts are needed that define value, injury, obligations and legalized authorization.

The framework needs to be developed with the following pre-conditions:

- The legal framework should not be left to the Government on its own. It should be a coordinated effort between such parties as the ICT industry, the private sector, the legal profession, the Rwanda National Bank, international experts and key Ministries.
- It should be flexible and innovative to cope with the changing face of technology
- The legal framework should not place additional controls and restrictions already encumbering the citizen's life and that of the private sector.
- The framework should be fair, democratic and compliant with the basic principles of the constitution.
- It should be predictable.
- New laws should be quickly analyzed, decreed and implemented.

It follows that in order for Rwanda to be e-ready and for it to have a thriving ICT sector, the legal framework needed for this sector must be globally addressed.

A comprehensive framework should address the following issues but not be restricted to them:

- e-Signatures
- The legalization of e-Deeds (Documents produced by a computer system)
- The legality of web-based transactions
- Electronic payments
- Confidentiality of information
- Freedom of expression and communication
- Banking related issues
- Encryption requirements and standards
- Security requirements and standards
- Procurement related issues
- Unfair practices: misuse of meta-tags to drive traffic to one site, spamming, occupation of home pages (Changing default browser home page to one's own), cyber-squatting or page hijacking (Occupying someone's website), denial of service (DOS), etc.
- Improper conduct: dangerous, unlawful, anarchic or inappropriate conduct
- Consumer protection: extending such laws to web situations
- Intellectual property protection
- Cyber crime: hacking, fraud, misuse of credit cards, virus generation and propagation (Including all related diseases such as Trojan horses, worms, etc.)
- Interactions between banks and all the following: citizens, public and private sector.
- Clarification of taxation for web-based commercial transactions, especially those that are contracted via non .rw domains.
- Electronic contracts
- Data protection and privacy
- Access to Information
- Electronic payments
- Liability issues
- Cross-border transactions
- Taxation

Developing such a framework would be an ambitious project. The Government must regard this as a high priority issues and endorse it to ensure speedy development of laws and regulations. This could result in a new integrated "ICT ACT".

Most importantly, the Government's own internal regulations need to be revised. Whether this is a legal or an administrative reform issue is not critical to define. There are many regulations within the Government that need to be revised. Here follows some examples:

- The acceptance of checks and transfers, leading to on-line payments
- The legal issuing of documents by computers
- Authentication of various records
- The removal of archaic practices such as financial and rubber stamps
- The reduction of the number of signatures by transferring validation to the ICT application. Example: an e-Transaction produced by an employee with the authority to do so need not be endorsed by higher officials, and if so, then that endorsement should be electronic.

#### *Benefits of the Planned Action:*

- Liberalize and Facilitate trade and investments in ICT products and services;
- Facilitate growth of e-Transaction/e-Trade/e-Commerce;

#### *Current and On-going Work:*

Cabinet-appointed Committee to Review Investment Laws (Draft e-Commerce and Intellectual Property Laws), Review of Laws Governing PSOs by Parliament, Proposals for an “ICT Bill” by Parliament/UNDP/Ministry of Infrastructure, etc

*Risks:*

Long time taken to introduce the legal framework may retard the development of key Planned Actions in most pillars.

*Budgetary Estimate:*

Category B (between US\$200,000 and US\$500,000)

*Schedule:*

Phase 1: Recognition of Electronic Documents as “Writings” and Other Rules of Electronic Message Exchange

Phase 2: Endorsement of Business Choice in Transactions Based on Prior Agreement Entered into by Traditional Means

Phase 3: Government Authentication Standards for e-Government

**LRI-2.04: Implement ICT Standards and Guidelines**

Type	Consulting Projects
Relevant NICI-2005 Plan	<b>This Planned Action is an aspect of L4.7, L4.8, L4.9 of the NICI-2005 Plan</b>
Roll-over Planned Actions and Initiatives	<p><b>L4.7:</b> Commission and develop a program to define standards for the certification of ICT professional skills in Rwanda</p> <p><b>L4.8:</b> Put in place and enforce standards for the certification of ICT professional skills in Rwanda</p> <p><b>L4.9:</b> Set-up a Unit within RITA to monitor and ensure compliance with Standards, Best Practices and Guidelines</p>
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	RITA
Implementation Agencies	RITA in collaboration with the Rwanda Bureau of Standards

**Planned Action Details**

*Purpose:*

To standardize various ICT products and practices within the Government

*Description:*

The Public Sector would benefit a lot from standards and guidelines to be developed in Rwanda and used in the following broad areas:

- ICT Product Oriented Standards: Hardware, Networking, Telecommunications, Software, Databases, Operating Systems, Building, Rooms, and Environment
- ICT Practices Oriented Standards: Quality Management, Project Management, Procurement, Software Application Development, Package Evaluation Methodologies, Information Integrity/Security, Data Definition and Exchange, Risk Management, Training, Certification and Accreditation, Configuration Management

This Planned Action proposes the creation of a unit with the following responsibility:

- Develop the standards, guidelines and good practices for ICT in the Public Sector
- Develop the necessary mechanisms to promote and train the Public Sector on their use
- Develop the necessary legal framework to introduce and enforce them
- Develop the means of updating the standards and guidelines

Furthermore, this Planned Action would be of benefit to the private sector, which is the main supplier of ICT products and services to the public sector.

*Current and On-going Work:*

Consultancy nearly completed commissioned by RITA

*Budgetary Estimate:*

Category C (Between US\$500,000 and US\$800,000)

**LRI-2.05: A Global Kinyarwanda, English and French Glossary**

Type	Consulting Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Fourth quarter of 2009
Planned Action Ownership	RITA
Implementation Agencies	RITA in collaboration with the Rwanda Bureau of Standards

**Planned Action Details**

*Purpose:*

To standardize key terms in the three languages for such domains as management, technology and other sciences

*Description:*

One of the problems facing any content developer is that of providing text in more than one language. Although translation facilities are quite available in Rwanda, they have not been exposed on the web. Secondly, they have not been standardized. Very often, key words such as “traceability”, “backup”, “computer” are difficult for the translator. The result is miscommunication and non-standard translations.

The range of words or terms to be used can cover the following sectors:

- Technology
- Management and organization
- Economics
- Business and trade
- Insurance
- Government legal and regulatory terms
- Legal terms
- Accounting

Much of the above are already available but are found in disjointed sources. Setting up one consolidated database for all information would be of major benefit.

The project is to be implemented via a website that is generally partitioned into 3 areas:

- One area is used to collect the terms to be translated. Such terms are put into the “pending” state.
- Another area displays the pending terms and allows visitors to suggest translations.
- A third area displays the terms that have been agreed upon by an appointed technical group and have the status of “finalized”.

The project can be implemented in four on-going stages:

Stage 1: Establish the website. This would contain the above 3 areas.

Stage 2: Use the first area to collect the terms to be translated and place them in the “pending” status. Various parties can suggest terms on-line. Suggestions can be in any of the 3 languages.

This area of the site can also be supplemented by direct entry of lists of terms to be translated. The lists may come from various books, glossaries, etc. The entry can be directly into a database or can be in a back office, using the same web pages.

A technical group can review the suggestions and select those to keep, remove duplications, etc.

Stage 3: The site will provide a temporary work area where terms to be translated are made available. Visitors can then suggest translations. In this manner, the effort is shared over a wider audience.

Stage 4: The technical group can then review all suggestions and agree on the most suitable. As and when each term is finalized, its status will change from “pending” to “finalized”. It can thus be displayed in the pages that show the standardized translations.

This Web-based application can also be disseminated on CDs for offline browsing.

*Budgetary Estimate:*

Category A (Less than US\$200,000)

- Wills and inheritance issues
- Marriage, divorce and separation
- Inheritance laws
- Real estate laws and regulations: sales and purchases, surveying, restrictions, taxation, etc.
- Rental laws and regulations
- Insurance related laws and practices
- Consumer protection laws and regulations
- The legal system in Rwanda
- Key legal institutions
- Company law: this relates to two other Planned Actions, one on Business Start-up and the other on Labor Relationships

It is important to mention that this site will not replace formal legal practice. It is meant to guide the citizen in his or her daily life. The site can also be a means to direct the citizen towards the right counseling in case of informal legal requirements.

*Budgetary Estimate:*

Category B (between US\$200,000 and US\$500,000)

LRI-2.06: The Citizen's Guide to Legal Issues	
Type	Consulting Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> LRI-2.03: Justice Sector Information System
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Justice
Implementation Agencies	Ministry of Justice with Parliament; Ministry of Local Administration, Community Development and Social Affairs; National Civil Society Platform and RITA

**Planned Action Details**

*Purpose:*

To provide the citizen with assistance in getting familiarized with legal issues of interest to his or her daily activities

*Description:*

The citizen often needs to use legal services that are complex and unclear. The citizen needs to know his or her obligations and rights. The educational culture in Rwanda does not provide such a venue for the citizen or for the private sector to learn about their rights. However, the latter are often supported by legal counsel, reducing their risks.

An entity needs to be established to develop and maintain a website that provides such legal information and guidance. In some cases below, the issues are complicated by the need to provide information that relates to specific religious considerations. There are often differences between Government laws and religious laws.

The following guidance is required:



## PLANNED ACTIONS ROLLED OVER FROM THE NICI-2005 PLAN

### LRI-1: Initiatives to Facilitate the Necessary Regulatory Enabling Environment for the Promotion and Development of the Information and Knowledge Economy

Program Ownership	Ministry of Infrastructure
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop the legal, institutional and regulatory framework and structures required for supporting the deployment and utilization of ICTs within the economy and society.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To put in place the necessary regulatory framework and facilitate an enabling regulatory environment for the deployment and utilization of ICTs within the economy and society.</li> </ul>

#### L1.3

*Plan-Specific Actions:* Implement a program for the establishment of a mechanism for coordinated spectrum management and frequency planning

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Establishment a mechanism for coordinated spectrum management and frequency planning by 2007

*Planned Action Implementation Agency:* Ministry of Infrastructure

*Status:* Work in progress.

### LRI-2: Initiatives to Facilitate an Enabling Legal and Legislative Environment for the Development and Exploitation of ICTs in Rwanda

Program Ownership	Ministry of Justice and Institutional Relations
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop the legal, institutional and regulatory framework and structures required for supporting the deployment and utilization of ICTs within the economy and society</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To enact the necessary laws, cyber laws and relevant legislation to govern, regulate and facilitate the development, deployment, and exploitation of ICTs within the economy and society</li> </ul>

#### L2.2

*Plan-Specific Actions:* Put in place a program to develop and enact laws and legislation relating to communication sector liberalization

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Develop and enact communication-sector liberalization laws and legislation by 2007

*Planned Action Implementation Agency:* Ministry of Infrastructure, Ministry of Justice and Institutional Relations, Parliament

*Status:* Work in progress.

#### L2.3

*Plan-Specific Actions:* Implement a program to enact the necessary cyber laws to support e-Commerce and other Internet-related activities. *Note:* Some of the cyber laws to enact include: (i) Legislation for the Prevention of computer crimes (ii) Laws relating to Security including Digital Signatures, Cryptography and Encryption etc

(iii) Copyright and Intellectual Property Right Laws (iv) Electronic Government Legislation (v) Laws relating to Privacy of data, etc, and (vi) Freedom of Access to Information Laws

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Progressively enact the following cyber laws during the time frame of NICI-2010: (i) Legislation for the Prevention of computer crimes (ii) Laws relating to Security including Digital Signatures, Cryptography and Encryption etc (iii) Copyright and Intellectual Property Right Laws (iv) Electronic Government Legislation (v) Laws relating to Privacy of data, etc. (vi) Freedom of Access to Information Laws and other relevant cyber laws by 2010.

*Planned Action Implementation Agency:* Ministry of Justice and Institutional Relations The Parliament

*Status:* Work in progress.

### LRI-3: Initiatives to Put in Place the Necessary Institutional Framework, Structures and Bodies for Supporting the Implementation of National ICT4D Policies, Strategies and Plans

Program Ownership	GOR
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop the legal, institutional and regulatory framework and structures required for supporting the deployment and utilization of ICTs within the economy and society.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To set up suitable National ICT Structures and Bodies to coordinate, support and facilitate the development, deployment utilization and the spread of ICTs in the society and the economy.</li> </ul>

#### L3.5

*Plan-Specific Actions:* Implement the program to set up Information Technology Divisions or Directorate (ITSDs) in Government Ministries and Public Service Organizations

*Prerequisites:* None

*Planned Action Linkages:* G2.2

*Time-Bound Measurable Targets:* All Government Ministries including the Office of the President and the Office of the Prime Minister to set up their ITSD by the fourth quarter of 2006

*Planned Action Implementation Agency:* Relevant Ministries and Public Sector Organizations in collaboration with the Ministry of Public Service, Skills Development and Labor

*Status:* Work in progress.

### LRI-4: Initiatives to Facilitate Standards, Best Practices and Guidelines for ICT Deployment and Exploitation in the Society and Economy

Program Ownership	RTA and the Rwanda Bureau of Standards
Policy-Relevant Strategic Goals	<ul style="list-style-type: none"> <li>To develop the legal, institutional and regulatory framework and structures required for supporting the deployment and utilization of ICTs within the economy and society.</li> </ul>
Program-Specific Goals	<ul style="list-style-type: none"> <li>To facilitate the process of the development, adoption and the enforcement of international standards as well as best practices and guidelines for ICT development, deployment and exploitation in Rwanda</li> </ul>

#### L4.1

*Plan-Specific Actions:* Commission and develop a program to define standards to guide the importation of ICT products

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Commission and complete the formulation of standards to guide the importation of ICT products by the fourth quarter of 2006

*Planned Action Implementation Agency:* Ministry of Commerce, Industries and Tourism; and The Rwanda Bureau of Standards

*Status:* Work to start.

#### L4.2

*Plan-Specific Actions:* Put in place and enforce standards for the importation of ICT products

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Implement and enforce standards for the importation of ICT products by 2007

*Planned Action Implementation Agency:* Ministry of Commerce, Industries and Tourism

*Status:* Work to start.

#### L4.3

*Plan-Specific Actions:* Commission a program to formulate Guidelines and Standards for the provision of ICT training services by private computer training centers

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Commission and complete the formulation of Guidelines and Standards for the provision of ICT training services by private computer training centers by 2007

*Planned Action Implementation Agency:* Ministry of Education and RITA

*Status:* Work to start.

#### L4.4

*Plan-Specific Actions:* Put in place and enforce standards for the provision of ICT training services by private computer training centers

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Implement and enforce Guidelines and Standards for the provision of ICT training services by private computer training centers by 2007

*Planned Action Implementation Agency:* Ministry of Education and RITA

*Status:* Work to start.

#### L4.5

*Plan-Specific Actions:* Commission an initiative to define standards and best practices to guide the activities of companies and organization operating within the ICT production sector

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Commission and complete the development of standards and best practices to guide the activities of companies and organization operating within the ICT production sector by 2007

*Planned Action Implementation Agency:* Ministry of Commerce, Industries and Tourism and The Rwanda Bureau of Standards

*Status:* Work to start.

#### L4.6

*Plan-Specific Actions:* Put in place and enforce standards and best practices to guide the activities of companies and organization operating within the ICT production sector

*Prerequisites:* None

*Planned Action Linkages:* None

*Time-Bound Measurable Targets:* Implement and enforce standards and best practices to guide the activities of companies and organization operating within the ICT production sector by 2007

*Planned Action Implementation Agency:* Ministry of Commerce, Industries and Tourism

*Status:* Work to start.

#### L4.7

*Plan-Specific Actions:* *Time-Bound Measurable Targets:* Commission and develop a program to define standards for the certification of ICT professional skills in Rwanda

*Prerequisites:* None

*Planned Action Linkages:* None

Commission and complete the setting up of standards for the certification of ICT professional skills in Rwanda by 2007

*Planned Action Implementation Agency:* Ministry of Education National Council for Computer Education (NCCE)

*Status:* Work to start.

#### L4.8

*Plan-Specific Actions:* *Time-Bound Measurable Targets:* Put in place and enforce standards for the certification of ICT professional skills in Rwanda

*Prerequisites:* None

*Planned Action:* *Linkages:* None

Implement and enforce standards for the certification of ICT professional skills in Rwanda by 2007.

*Planned Action Implementation Agency:* Ministry of Education National Council for Computer Education (NCCE)

*Status:* Work to start.

#### L4.9

*Plan-Specific Actions:* Set-up a Unit within RITA to monitor and ensure compliance with Standards, Best Practices and Guidelines

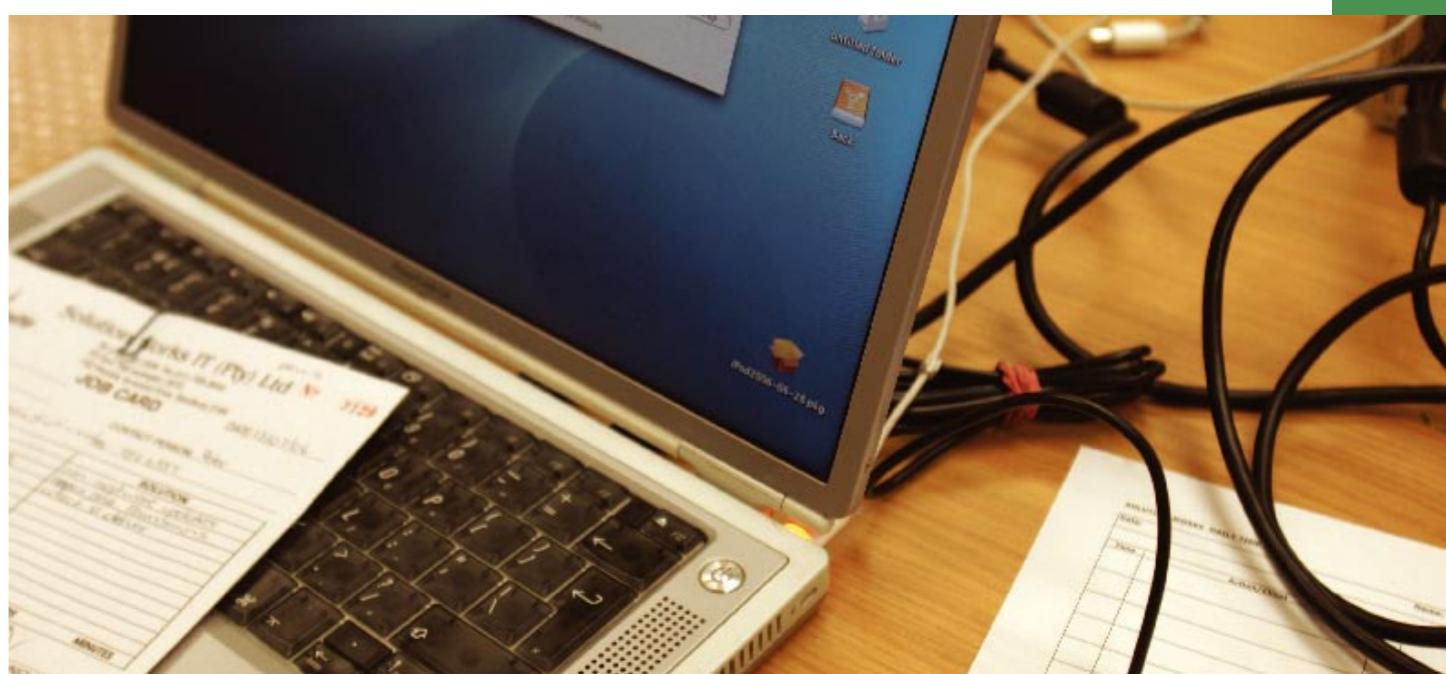
*Prerequisites:* None

*Planned Action:* *Linkages:* None

*Time-Bound Measurable Targets:* Set-up a Unit within RITA to monitor and ensure compliance with Standards, Best Practices and Guidelines by 2007

*Planned Action Implementation Agency:* RITA

*Status:* Work to start.



## LEGAL, REGULATORY AND INSTITUTIONAL PROVISIONS AND STANDARDS SUB-PLAN: THE IMPLEMENTATION SCHEDULE OF THE PLANNED ACTIONS

Planned Actions	2006				2007				2008				2009				2010			
	Q1	Q2	Q3	Q4																
LRI-2.01																				
LRI-2.02																				
LRI-2.03																				
LRI-2.04																				
LRI-2.05																				
LRI-2.06																				
L1.3																				
L2.2																				
L2.3																				
L3.5																				
L4.1																				
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L4.3																				
L4.4																				
L4.5																				
L4.6																				
L4.7																				
L4.8																				
L4.9																				

## MULTI-SECTORAL ECONOMIC DEVELOPMENT AND ICT-2020 POLICY IMPLICATIONS, AND RISK FACTORS OF THE SUB-PLAN

### Possible Contributions to the Realization of the GOR's Multi-Sectoral Economic Development Policy

The Planned Actions of this sub-plan will be providing the necessary enabling and facilitating environment for the development of the key sectors of the economy especially the ICT service sector and Industry. For example, the provision of an enabling regulatory environment for the development of the communications industry will encourage investment in the sector. This will have a positive impact on the rapid development of the sector, which will, in turn, have a multiplier effect on other sectors of the economy including the service sector, the agriculture sector and the industrial sector as a whole. Another possible area of direct and indirect contributions of this sub-plan to the GOR's multi-sectoral economic development policy relates to the enactment of relevant cyber laws to support the development of Internet-related activities and electronic commerce in Rwanda. These initiatives for Standards and Best Practices and Guidelines for ICT deployment and exploitation as per this sub-plan also have the potential to contribute directly and indirectly to the realization of GOR's multi-sectoral economic development policy

### Areas of Emphasis as per the ICT-2020 Policy

The Planned Actions of the *Legal, Regulatory, Institutional Provisions and Standards Sub-plan* have implications for both the exploitation and production of ICTs. Most of these Planned Actions are either targeted at providing an enabling legal, regulatory environment for facilitating the deployment, exploitation of ICTs or for facilitating activities aimed at supporting the development of a local ICT production and service provision industry. This sub-plan will therefore contribute to the realization of the GOR's policy goal aimed at simultaneously pursuing both ICT exploitation and production involving; the utilization and exploitation of ICTs to support the delivery of Government services and the activities of various sectors of the economy as well as the production, development and delivery of ICT products and services, i.e. towards the development and promotion of an ICT industry and service sector.

### Expectations for the Development of Rwanda's Information and Knowledge-based Society and Economy (IKE) Development Goals

It is anticipated that the implementation of the Planned Actions of the *Legal, Regulatory, Institutional Provisions and Standards Sub-plan* will contribute to the process of the development of the Rwanda's information society and economy – the ultimate goal of the Rwandan ICT-led development vision. In particular, it is envisaged that the implementation of the initiatives of this sub-plan will lead the achievement of the following Information and Knowledge Economy (IKE) goals:

- The development of a high-income economy dominated by trading in ICT products and services
- The development of an economy characterized by a large commercial services sector with a reasonably large and vibrant, ICT services sub-sector and industry
- The development of an economy characterized by a technology-based knowledge-driven industrial sector
- The development of an economy in which the majority of the working population is either directly or indirectly involved in information and communications related activities
- The development of an economy characterized by a widespread deployment and exploitation of ICTs within the society to support the delivery of health, education, Government and social services
- The development of an economy characterized by a modern educational system within which ICTs are widely deployed to facilitate the delivery of educational services
- The development of an economy in which a reasonable large proportion of the population have access to information and communications technology products and services
- The development of an economy in which the provision and delivery of goods and services of the key sectors of the economy are to a large extent facilitated by information and communications technologies
- The development of an economy in which the provision and delivery of services by Government and its administrative machinery are to a large extent facilitated by information and communications technologies
- The development of an economy based on an advanced and reliable national information and communications infrastructure
- The development of an economy based on a literate society with a high proportion of computer literates.

### The Risk Factors

There are no apparent risk factors associated with the implementation of the Planned Actions of this sub-plan



## THE SUB-PLAN FOR NATIONAL SECURITY, LAW AND ORDER

### Summary of National Strategy and Policy Linkages of the Sub-plan

#### Relevant Vision for Rwanda (VfR) Mission Strategies

- To promote and encourage the deployment and utilization of ICTs within the economy and society.
- To facilitate the process of national reconciliation and reintegration by promoting social and cultural interaction within the society.
- To develop the legal, institutional and regulatory framework and structures required for supporting the deployment and utilization of ICTs within the economy and society.

#### Relevant Government Policy Commitments

##### *Commitment to Addressing the National Security and Law and Order Implications of the Development of the Rwandan Information Society and Economy*

The GOR recognizes that the deployment, exploitation and utilization of ICTs within the economy and society raises a number of security and privacy and consumer protection issues that need to be address as part of the efforts to facilitate the socio-economic development process of the country. Some of these security concerns have national security and law and order implications while others relate to the protection of individuals and organizations from unlawful acts using the technology. The Government is committed to take necessary policy measures and actions to address these security, and law and order concerns as well as take steps to address issues relating to: consumer protection in the information age; cyber-crimes; unlawful access to critical information, computer and communications networks and resources; and electronic frauds among others. The Government is also committed to facilitating the work and the operations of the security services and agencies through the deployment and exploitation of ICTs.

##### *Commitment to Development within a Peaceful and Secure Environment*

The GOR through its Vision for Rwanda, does not envisage the future of Rwanda only in economic development terms – the Government also acknowledges the need for Rwanda to develop politically, socially and culturally to foster: political stability, good governance and system of Government; improvement in the quality of life for of the people of Rwanda; national unity and reconciliation; social interaction, cohesion and integration; social justice; environmental protection and the fostering of cultural heritage in Rwanda. The GOR through its Vision for Rwanda also aim at enhancing the pride and confidence of the people of Rwanda in their abilities and capabilities develop Rwanda into a prosperous nation that is at peace with itself territorially and ethnically. The Government is also committed to the mission to promote social and cultural interaction and integration at all levels of the Rwandan society.

#### Relevant ICT4D Policy Expectations

Support the creation of the necessary enabling environment to facilitate the deployment, utilization and exploitation of ICTs within the economy and society. Support the development of the legal, institutional and regulatory framework and structures required for supporting the deployment, utilization and the development of ICTs within the economy and society. Promote widespread deployment and access to information and communication technologies and resources within the community in urban and rural areas. Contribute to the development and implementation of e-Government, e-Commerce and e-Education in Rwanda.

#### Policy Action Items

To implement its ICT4D policy intentions in the area of National Security, Law and Order within the context of facilitating the development of the Rwanda information and knowledge-based economy and society, the Government is committed to implementing specific Planned Actions targeted at achieving the objectives and goals of the following policy action items:

##### *Policy Action Item 1: Secure Government, Public and Private Communication Networks and their Inherent Data and Information*

- Promote and encourage the deployment and exploitation of ICTs for combating national security threats emanating from either local or external sources
- Deploy ICTs to facilitate, enhance and support, the activities, operations, management and administration as well as the command and control structure of the National Security Agencies, namely the Armed Forces, National Security Services, National Police and Prison Services.

##### *Policy Action Item 2: Develop a legal framework for data and consumer protection for Rwanda's citizens and its National image and identity*

- Develop legal framework to monitor cyber crime
- Protect citizens' information
- Protect consumers and their rights

##### *Policy Action Item 3: Improve the Operations, Management and Administration of the National Security Agencies*

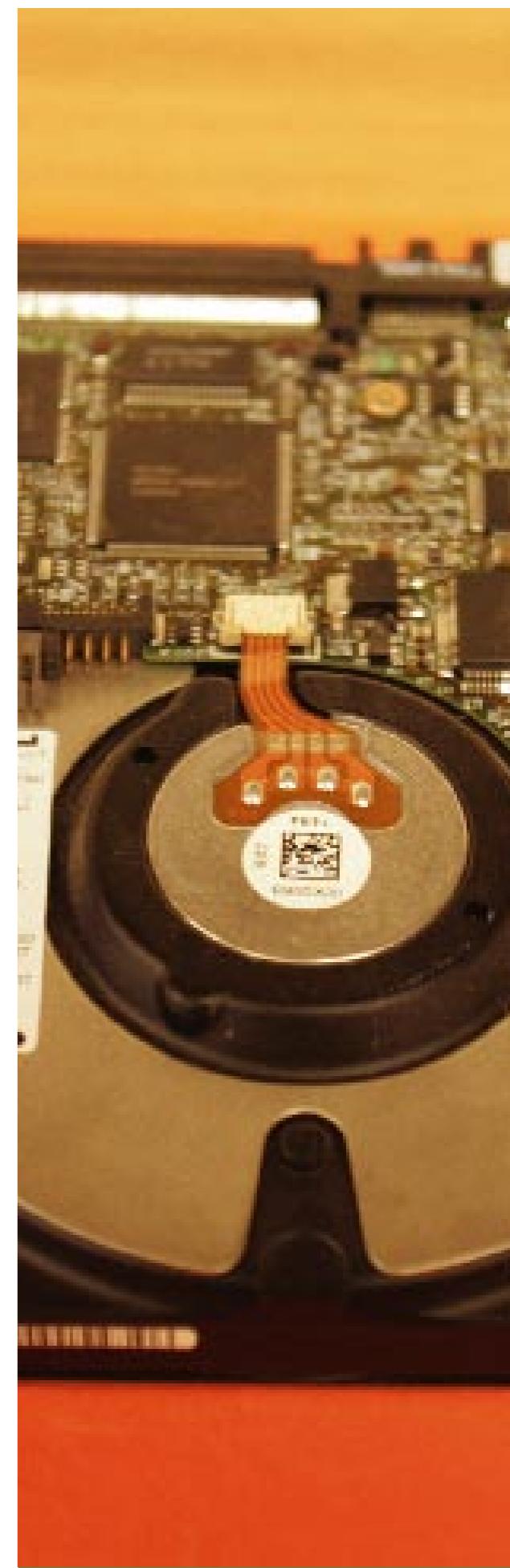
- Improve the handling of all administrative systems and operations
- Introduce networking to facilitate communications
- Improve voice communications for speed of action

##### *Policy Action Item 4: Integrate National Security Systems with those in Related Sectors*

- Interface with the Justice sector: court cases, verdicts, etc
- Interface with the Transportation and Traffic sectors
- Interface with operations related to immigration, refugees and national identities
- Interface with Early Warning Systems

##### *Policy Action Item 5: Ensure that the proper laws exist for data confidentiality and security*

- Establish laws that define the levels of data confidentiality in the nation
- Establish laws that define the minimum security levels required for different types of access
- Establish laws that prevent cyber crime such as fraud, theft, illegal access, etc.



## PLANNED ACTIONS

### NSL-2.01: Strengthen ICT Competence in the National Security Specialized Units

Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> None
Planned Action Due Date	Fourth quarter of 2007
Planned Action Ownership	Ministry of Defense
Implementation Agencies	Ministry of Defense in collaboration with the National Security Agencies and Ministry of Public Service, Skills Development and Labor

#### Planned Action Details

##### Purpose:

Develop training programs in ICT so that the ICT units as well as the other specialized units such as the forensic investigations, technicians and engineers improve their ICT competence.

##### Description:

To strengthen ICT human resources and capacity building with target training in computer sciences and electronic communication engineering at different qualification levels. The target is to have about 3000 professionals by 2010

##### Benefits of the Planned Action:

- ICT competence increases the chance of implementing better ICT Planned Actions
- ICT competence increases the efficiency of day-to-day operations

##### Current and On-going Work:

An E-ICT Training Center has already trained Government and private sector staff

##### Risks:

Insufficient funding

##### Budgetary Estimate:

Category E (between US\$1 million and US\$3 million)

##### Schedule:

Train 3000 people by 2010

### NSL-2.02: ICT Training Labs for Security Services

Type	Institutional Project
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<i>Prerequisites:</i> None <i>Linkages:</i> IEC-2.01: Enhance ICT Infrastructure in Public Sector
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Defense
Implementation Agencies	Ministry of Defense in collaboration with the National Security Agencies

#### Planned Action Details

##### Purpose:

To continue the implementation of ICT training labs to assist the Security Sector academies and schools (including labs) and enhance the existing ICT training capacity.

##### Description:

This Planned Action helps in the building of capacity in the Security Sector through the implementation of specialized training labs. These labs will complement existing efforts being carried out in ICT units.

##### Budgetary Estimate:

Category E (between US\$1 million and US\$3 million)



NSL-2.03: Automation of the Ministry of Defence's Headquarters	
Type	Institutional Project
Relevant NICI-2005 Plan	This Planned Action is an aspect of G3.1, G3.2, G3.3 and G3.4 of the NICI-2005 Plan
Roll-over Planned Actions and Initiatives	<p><b>G3.1:</b> Government Ministries, PSOs and the Parliament to commission an Organization-wide Corporate Network Implementation Report</p> <p><b>G3.2:</b> Each Government Ministries, PSOs and the Parliament to implement a flexible organization-wide corporate network.</p> <p><b>G3.3:</b> Each Government Ministry or PSO to identify and develop for its specific use relevant computer-based applications, information and database systems to support its administrative and service delivery activities.</p> <p><b>G3.4:</b> Each Government Ministry or PSO to connect their corporate network to GovNet</p>
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Defense
Implementation Agencies	Ministry of Defense

#### Planned Action Details

*Purpose:*

Computerization and automation of Ministries' headquarters and associated Agencies (PSOs). This Planned Action will develop a WAN for the Security Sector Ministries and have internal administrative networks.

*Description:*

This Planned Action will develop an Internet/Intranet network for the Security Group (including brigade-based Telecenters) and a back up to the fiber connectivity using VSAT/Wireless technology.

The Planned Action will also include the automation of the key administrative applications of the Ministry.

*Budgetary Estimate:*

Category D (Between US\$800,000 and US\$1,000,000)

*Links to Other Planned Actions:*

All other Planned Actions in Pillar Ten

NSL-2.04: Professional Mobile Radio for the Security Forces	
Type	Development Projects
Relevant NICI-2005 Plan	N/A
Roll-over Planned Actions and Initiatives	
Planned Action Prerequisites and Linkages	<p><i>Prerequisites:</i> None</p> <p><i>Linkages:</i> None</p>
Planned Action Due Date	Fourth quarter of 2008
Planned Action Ownership	Ministry of Defense
Implementation Agencies	Ministry of Defense

#### Planned Action Details

*Purpose:*

To develop a Professional Mobile Radio (PMR) communication Platform (based on a Push To Talk System platform such as TETRA) to be used by the Security Sector and associated Agencies.

*Description:*

In order to manage various aspects of the Security Forces, a robust PMR is needed. It can be used for the control of fleet operations. It can also help in the planning and management of other assets. Finally, other applications can be integrated with the PMR.

The PMR can be based on the TETRA standard, which stands for Terrestrial Trunked Radio. This comprises a suite of open digital trunked radio standards defined by the European Telecommunications Standards Institute (ETSI) to meet the needs of the Professional Mobile Radio (PMR) users. TETRA is an Interoperability standard that allows equipment from multiple vendors to interoperate with each other.

*Benefits of the Planned Action:*

Standardized use of equipment. Equipment can be used from multiple vendors. On the spot management of operations

*Budgetary Estimate:*

Category D (Between US\$800,000 and US\$1,000,000)

#### NATIONAL SECURITY, LAW AND ORDER SUB-PLAN: THE IMPLEMENTATION SCHEDULE OF THE PLANNED ACTIONS

Planned Actions	2006				2007				2008				2009				2010			
	Q1	Q2	Q3	Q4																
NSL-2.01																				
NSL-2.02																				
NSL-2.03																				
NSL-2.04																				

#### MULTI-SECTORAL ECONOMIC DEVELOPMENT AND ICT-2020 POLICY IMPLICATIONS, AND RISK FACTORS OF THE SUB-PLAN

Possible Contributions to the Realization of the GOR's Multi-Sectoral Economic Development Policy

The realization of the GOR's multi-sectoral economic development policy will not be possible without addressing the national security and law and order issues relating to the deployment exploitation and the utilization of ICTs within the economy and society. The implementation of the Planned Actions of the *National Security and Law and Order Sub-plan* will no doubt have both and indirect impact on the development of key sectors of the economy targeted within the GOR's multi-sectoral policy.

For example, addressing the national security and law and order implications of the digital age within the context of Rwanda will encourage investment in not only the ICT-related sectors of the economy but also other key sectors of the economy, including agriculture. The development of the ICT services sector and industry will no doubt have a multiplier effect on other sectors of the economy, including the social sectors, like health and education among others.

Another possible area of direct and indirect contribution of this sub-plan to the GOR's multi-sectoral economic development policy relates to the enactment of relevant laws targeted at addressing the national security and law and other concerns of the deployment and exploitation of ICTs within the society and economy. The enactment



of these laws will impact on the development of the Rwanda's information society and economy and as such will contribute directly and indirectly to the realization of GOR's multi-sectoral economic development policy.

#### Areas of Emphasis as per the ICT-2020 Policy

The Planned Actions of the *National Security and Law and Order Sub-plan* have implications for both the exploitation and production of ICTs. Most of these Planned Actions are either targeted at providing an enabling environment for facilitating the deployment, exploitation of ICTs or for facilitating activities aimed at supporting the development of a local ICT production and service provision industry

This sub-plan will therefore contribute to the realization of the GOR's policy goal aimed at simultaneously pursuing both ICT exploitation and production involving: the utilization and exploitation of ICTs to support the delivery of Government services and the activities of various sectors of the economy as well as the production, development and delivery of ICT products and services, i.e. towards the development and promotion of an ICT industry and service sector.

#### Expectations for the Development of Rwanda's Information-rich and Knowledge-based Society and Economy (IKE) Development Goals

It is anticipated that the implementation of the Planned Actions of the *National Security and Law and Order Sub-plan* will contribute to the process of the development of the Rwanda's information society and economy – the ultimate goal of the Rwandan ICT-led development vision. In particular, it is envisaged that the implementation of the initiatives of this sub-plan will lead the achievement of the following Information and Knowledge Economy (IKE) goals:

- The development of a high-income economy dominated by trading in ICT products and services
- The development of an economy characterized by a large commercial services sector with a reasonably large and vibrant, ICT services sub-sector and industry
- The development of an economy in which the majority of the working population is either directly or indirectly involved in information and communications related activities
- The development of an economy characterized by a widespread deployment and exploitation of ICTs within the society to support the delivery of health, education, Government and social services
- The development of an economy in which the provision and delivery of goods and services of the key sectors of the economy are to a large extent facilitated by information and communications technologies
- The development of an economy in which the provision and delivery of services by Government and its administrative machinery are to a large extent facilitated by information and communications technologies

#### The Risk Factors

There are no apparent risk factors associated with the implementation of the Planned Actions of this sub-plan.



## PART THREE

## SUPPORTING DOCUMENTATION

## AND PLAN DETAILS

"YOU CANNOT TEACH A MAN ANYTHING; YOU CAN ONLY HELP HIM FIND IT WITHIN HIMSELF" GALILEO

...FOR THE SAME REASON...YOU CANNOT TEACH A NATION ANYTHING; YOU CAN ONLY HELP IT FIND IT WITHIN ITSELF

## APPENDIX 1: E-READINESS ASSESSMENT FOR RWANDA (CARRIED OUT AT THE COMPLETION OF THE NICI-2005 PLAN)

### Introduction

E-Readiness measures a nation's capacity to participate in the digital economy. It is the source of national economic growth in the networked century, and the prerequisite for successful "e-related" activities. E-Readiness is gauged by assessing the nation's relative advancement in the areas that are most critical for ICT adoption, and the most important applications of ICTs.

When considered in the context of a strategic planning dialogue, an assessment based on these elements provides a robust portrayal of the nation's e-Readiness.

For example, e-Readiness results in:

- Promoting efficiency (reducing costs, increasing productivity and reducing delivery times).
- Creating new opportunities (extending market reach for commodities, environment for new businesses).

In assessing Rwanda's e-Readiness, the following were the main five areas addressed:

1. Network Access
2. Networked Learning
3. Networked Society
4. Networked Economy
5. Networked Policy

### Network Access

This key area covers Information Infrastructure.

#### Fixed Line Access

Rwandatel carried out the installation of fixed lines (including wireless fixed lines). The take up of fixed lines has not been as fast as predicted. In the 1999 Financial Report the predicted number of fixed lines by the end of 2000 was about 54,000. By early 2001,

only 24,612 lines had been installed, of which nearly 5,000 were temporarily inactive mainly for reasons of non-payment. To date, there are about 23,000 active lines. This shortfall in fixed line installation has been compensated for by the successful rollout of cellular communications.

The telecommunications infrastructure is modern in that it consists of a digital backbone with microwave links to Ruhengeri, Gisenyi, Nyabisindhu, Cyangugu, Gikongoro and Butare from Kigali. The incumbent state-owned telephone and Internet monopoly, Rwandatel, has been privatized and was sold to TerraCom Communications in 2005. Artel provides telephony and Internet over VSATs in the rural areas.

#### Mobile Cell Network

MTN RwandaCell was the sole mobile operator in Rwanda until 2005. MTN, a South African cellular operator, has a large stake in MTN RwandaCell. RwandaCell has installed a Global System for Mobile Communications (GSM) network across the country, covering all provinces, all main towns and now much of the countryside. Although this does not provide complete coverage (i.e. there are "dead spots"), it nevertheless reaches the great majority of the population. Currently RwandaCell has approximately 200,000 customers, of which about 10% are dormant at any one time.

Tuvugane are public wireless payphones. The Tuvugane companies have partnered with RwandaCell to make phone calls very affordable, both in Kigali City and in provincial areas.

A second GSM license was given to the recently formed entity, Rwandatel-Terracom. Terracom Communications is laying fiber optics across the country and has installed wireless Internet in several schools and communities.

MediaPost, a company no longer in operation, had offered a wireless Internet service in the 3.5 GHz range until early 2005.

#### Internet Availability

*Terracom Communications:* In less than a year, Terracom Communications has grown from a start-up to a premier communication company licensed to provide all telecom services (mobile, fixed phones, VoIP and data services). Terracom is making fast progress in laying

fiber optic cables across Rwanda. By the end of 2005, Terracom will have laid 256 km of fiber: from Kigali to Butare (140 km) and from Kora to Karisimbi (40 km). In and around Kigali City, another 20 kilometers of fiber is being laid. Terracom has acquired the main fixed phone operator, Rwandatel.

Terracom has more than 200 wireless customers and 20 customers on fiber. Its bandwidth was expected to reach 30 Mbps by June 2005.

*Artel Communications* boasts a network of 275 VSATs, 257 of which are in Rwanda, and 18 in other countries. Of the 275, 199 are solar-powered and 76 are on the national electricity grid. Of the 257 VSATs, 156 are in Local Government offices. Artel Communications has started exporting services to Congo DRC, Cameroon and South Africa. Artel dominates rural telephony and Internet with 565 phone subscribers and 32 Internet customers.

*Rwandatel* still dominates the fixed phone business with:

- Fixed phones: 23,000 subscribers
- Internet dialup: 3,000 subscribers
- Leased lines: 30
- ISDN lines: 60
- Bandwidth for Internet: asynchronous, 9 Mbps downlink, 5 Mbps uplink.

The key players in the wireless Internet business are:

- Terracom
- Rwandatel

Rwandatel has 40 customers in the 2.4 GHz range, an 11 Mbps shared bandwidth.

*Tuvugane phones:* the current installed base includes 2400 Tuvugane phones. Because of the phone cost (\$500), the entire market is 4,000 units. The saturation point is 3,000 units. It is estimated that between 50 and 100 new units are deployed per month.

*Voice over IP:* Rwandatel has three gateways (30 channels, 30 channels, 60 channels) used for international call terminations. Rwandatel VoIP is not available for customers. Terracom offers VoIP using open source software called Asterix. Terracom's VoIP is open to paying customers.

Other statistics include:



TELEPHONES	2001	2002	2003	2004
Fixed phones	22,000	23,000	24,500	25,000
Rural phones	128	360	450	565
Mobile	78,000	95,000	120,000	161,000
<b>INTERNET</b>				<b>2004</b>
Internet dialup lines	3000			
Leased Lines	30			
ISDN lines	60			
Wireless	40			
VSAT Internet	60			
Downlink	9 Mbps (Rwandatel)			
Downlink	512kbps (Arтел/Gilat)			
Downlink	1 Mbps (Arтел/Taide)			
Uplink	5 Mbps (Rwandatel)			
Uplink	256kbps (Arтел/Gilat)			
Uplink	512 kbps (Arтел/Taide)			

These numbers do not include the bandwidth of Terracom, which was expected to reach 30 Mbps by June 2005.

### Internet Affordability

The prices which businesses and individual consumers pay for Internet access are in most cases determined by a combination of fees for basic telephony and ISP services. At the end of 2005, Internet was still very expensive for individuals and organizations. For a 256 kbps line connected to fiber optics, the monthly fee was \$1,250.

Internet is affordable in cyber cafes and existing Community Telecenters: it costs an average of RWF 400, i.e. \$0.71 for an hour. However, cyber cafes and Community Telecenters are mostly only available in urban areas.

### Rwanda Internet Exchange Point

A major milestone was achieved in when RITA successfully led an effort to create a Rwanda Internet Exchange (RINEX) in June 2004. The RINEX allows the ISPs to exchange domestic Internet traffic without having to send data across multiple European and US hops. This results in increased broadband speed inside the country and decreased overall Internet costs.

There are three commercial ISPs: Terracom, Rwandatel, and Artel. Both KIST and NUR provide ISP services as well. KIST and NUR both use Very Small Aperture Terminals (VSAT) technology.

### Network Speed and Quality

The available bandwidth, both for individual local access and for a nation's connection to the Internet backbone, determines the number of users and types of on-line activities the network can support.

In 2005, with the advent of Terracom and its fiber optics, network speed improved greatly and will be sufficient for the medium term. However, the quality of service is not yet consistent.

### Hardware and Software

In 2006, there is a vibrant cell phone market. The local computer assembly market is taking off. Software Planned Actions tailored to local needs and using the local language are starting to be deployed. Linux has been localized to Kinyarwanda. Windows will be localized to Kinyarwanda within the next two years.

### Service and Support

Strong customer service orientation is important in determining the success of network deployment. Long waiting periods for installation and repair and a lack of support services by telephone companies and Internet providers still pose major obstacles to e-Readiness. In 2005, service and support was still a challenge. It is hoped that the right company will take advantage of the opportunity to provide such support.

### Networked Learning

#### Schools' Access to Information and Communication Technologies

There were 2142 primary and 363 secondary schools in Rwanda in 2001, where 29,000 teachers taught approximately 1,500,000 pupils giving an average student teacher ratio of 1:52.

Very few primary schools have electricity. Although the deployment of computers in primary school is still very low, several projects to equip schools with ICT are under way.

Currently however, the vast majority of Rwanda schoolchildren have not been exposed to computer technology in any way and no schools use computers for teaching. The Ministry of Education, Science, Technology and Scientific Research, in partnership with several donors, has recently launched a program aimed at providing computers and connectivity to all secondary schools in the country by the end of the year 2006.

### Enhancing Education with ICTs

#### National University of Rwanda

The National University of Rwanda (NUR) has well-structured short, medium and long term plans to dramatically advance computer and information literacy among its students. It has several computer laboratories and requires all students to undertake basic computer training. There are approximately 6,000 students enrolled and a ratio of one machine to 15 students. NUR also offers Internet access via its VSAT satellite, and has linked various units across the campus via an optic fiber backbone. There is also a Rwandatel leased line connecting Butare and Kigali, but it is not currently in use, and is very costly at US\$2,500 a month.

Practical training programs at NUR include network engineering, supported via the Cisco Networking Academy; and database management, supported by Oracle. The university has commenced a Bachelor of Computer Science degree program. Nine students graduated in 2002. Another 30 are expected to graduate this year. NUR is also a node for the African Virtual University (AVU) and receives academic material from the this institution.

#### Kigali Institute of Science and Technology (KIST)

The Kigali Institute of Science and Technology was founded in 1997 with 209 students and has grown rapidly to a student enrolment of over three thousand and a faculty of over 150. It has linkages with several institutions elsewhere in Africa and abroad. KIST has a Faculty of Technology and within that a Department of Computer Engineering and Information Technology. It has several computer laboratories with more than 200 PCs and offers courses from basic computer literacy to diploma and degree level training programs in computer studies. KIST has started a pilot project on computer maintenance and has students training in that area. It is also a node for the African Virtual University.

#### Kigali Institute of Education (KIE)

The Kigali Institute for Education trains teachers. KIE has a Computer Science/Education department that intends to train teachers on how to teach computer science. It has also developed an ICT training program targeting mainly KIE employees; but also employees in the public and private sector; and school leavers who do not gain direct entry to universities but require skills for gainful employment. KIE also has a Distance Learning Program with an ICT Center to support it. There are

11 primary school teacher-training colleges in Rwanda, and International Monetary Fund (IMF) funding has been earmarked to establish ICT training in each one.

#### Other Institutions

Apart from the three public institutions mentioned above there are half a dozen private institutions, all of which have included compulsory computer literacy courses and some of them even have diploma and degree programs in computer science.

### Developing the ICT Workforce

There is a need to have ICT educational programs at all tertiary institutions offering under-graduate and postgraduate degrees in computer science and information technology. Essentially such training of the ICT workforce should not only be confined to the urban centers. This will give more citizens the opportunity to become ICT-literate.

The ICT workforce in Rwanda has to be developed further. In Rwanda there is some professional training in Kigali, and first steps towards technician training at tertiary institutions are being taken, but Rwanda relies on external consultants to provide advanced ICT support.

### Networked Society

#### People and Organizations Online

Personal ICT usage is still low and limited almost exclusively to personal and home telephone use. The liberalization of the Telecom sector is expected to result in improved affordability of the services, thus increasing personal and home use of ICT.

A lot of effort is being made to extend connectivity to rural areas through various initiatives including the USAID Telecenters program, the SchoolNet-World-Links program and the International Telecommunication Union (ITU) National Telecenters Project<sup>1</sup>.

#### Locally Relevant Content

It must be realized that the national information network grid and Internet is a two-way communications and publishing medium. Access issues should also take into account what publishing and communication resources are available at the user end. Thus, it is important to understand that national and local connectivity to the national information network must

1. "Building on an ICT Led Society in Rwanda", 2005

also be coupled with locally relevant content. Content should address various sectors of the society, cutting across all the 10 pillars. In Rwanda, there is a move to have content developed in Kinyarwanda.

#### Information and Communication Technologies in Everyday Life

Government users access the Internet from their offices, thanks to the infrastructure already laid down as part of the foundation of e-Government. Nevertheless, there is a need to reduce barriers in deploying ICT and in developing the required human capital for sustainable participation of Rwandan society in the ICT industry. At the same time, there is a need to improve the penetration of fixed and mobile telephone lines as well as public pay-phones in the rural areas.

#### Information and Communication Technologies in the Workplace

A study done by On the Frontier (OTF) in May 2004 found the size of the industry to be US\$25 to 30 million, of which the biggest portion accrues to Rwandatel and RwandaCell. Although no reliable figures exist, the overall growth of the industry is probably in excess of 10% with much of that coming from RwandaCell. Most businesses are providing distribution services for multinational companies or are providing routine installation services.

Rwanda Network Computer (RNC) has recently launched a PC assembling unit and there are several organizations performing first level maintenance, mostly in Kigali. Software development companies are growing in size and number and all of them are in Kigali.

National Government reports the highest levels of ICT access. Local Government falls into the two lowest categories, driven by lack of access to ICT infrastructure. Large businesses have the only significant “intensive ICT” users. SMEs are evenly distributed across the spectrum, reflecting the varied conditions under which SMEs operate in Rwanda.

#### Networked Economy

##### ICT Employment Opportunities

The supply of IT professionals is considerably less than current demand, especially those with higher skills and experience. Furthermore, job mobility in the ICT sector is very high. Therefore, there is a need for increased emphasis on human capital development.

#### e-Government

The NICI-2010 Plan has a detailed sub-plan on the implementation of e-Government in Rwanda. Appendix 7 below provides the details of a comprehensive e-Government implementation strategy for Rwanda; this is to be implemented over the envisaged four NICI plans. In addition, the e-Rwanda project detailed in Appendix 8 below targets the implementation of some of the e-Government Planned Actions of the NICI-2010 Plan.

#### Network Policy

The Rwandan ICT-led Socio-economic Development Policy, which provides the basis for the development of the NICI plans, including NICI-2005 and NICI-2010, constitutes what could be described as a Network Policy. The ICT4D Policy, which was launched in 2000, was preceded by the development of a comprehensive ICT-led Integrated Socio-economic Development Framework for Rwanda (known as the Framework Document) in 1999.

The ICT4D Policy for Rwanda is aimed at facilitating the transformation of Rwanda into an information-rich knowledge-based society and economy within twenty years. The first ICT4D Plan (2001 to 2005) for Rwanda, the NICI-2005 Plan, targeted at the implementation of the Government's policy goals and commitments of the ICT4D Policy, was launched in 2001. The implementation of this Plan, the first of four NICI Plans envisaged for the 20-year time frame of Rwanda's *Vision 2020*, was completed in 2005.

As part of the implementation of NICI-2005, a multi-sectoral regulatory authority (RURA) was set up to, among other things, act as an independent regulator for ICT (and other utilities), and prepare the way for a liberalized and privatized telecommunications sector. Other key enabling structures, including the Rwandan Information Technology Agency (RITA), were also established.

Furthermore, several regulatory policies and legislative issues have either been put in place or are in the process of being enacted. Examples include the Telecom Law, legislation on competition and accompanying Ministerial Orders.

## APPENDIX 2: PLANNED ACTIONS DEVELOPMENT FRAMEWORK

### 1.0 A REVIEW OF THE NICI-2010 PLAN RELATED INITIATIVES

The Rwanda ICT4D (or NICI) process is based on Rwandan requirements. However, it is closely aligned to three other initiatives that drive many of its principles and foundations. These are briefly described below.

#### 1.1 Millennium Development Goals (MDGs)

The Millennium Development Goals summarize the development goals agreed on at international conferences and world summits during the 1990s. In September 2000, at the United Nations Millennium Summit, world leaders elaborated the key goals and targets in the Millennium Declaration (September 2000).

Based on the declaration, UNDP worked with other UN departments, funds and programs, the World Bank, the International Monetary Fund (IMF) and the Organization for Economic Cooperation and Development (OECD) to produce a concise set of goals, numerical targets and quantifiable indicators to assess progress. The new set is known as the “Millennium Development Goals”, which includes eight goals, 18 targets and over 40 indicators. The UN General Assembly has approved these as part of the Secretary-General's Millennium Roadmap.

The Millennium Development Goals, to be achieved between 1990 and 2015, include:

1. Halving extreme poverty and hunger.
2. Achieving universal primary education.
3. Promoting gender equality.
4. Reducing under five mortality by two thirds.
5. Reducing maternal mortality by three quarters.
6. Reversing the spread of HIV/AIDS, malaria and tuberculosis.
7. Ensuring environmental sustainability.
8. Developing a global partnership for development, with targets for aid, trade and debt relief.

#### 1.2 World Summit on Information Society (WSIS)<sup>2</sup>

The World Summit on Information Society (WSIS) provides a unique opportunity for all key stakeholders

to assemble at a high-level gathering and to develop a better understanding of the information revolution and its impact on the international community.

It aims to bring together Heads of State, Executive Heads of United Nations agencies, industry leaders, non-governmental organizations, media representatives and civil society in a single high-level event. The roles of the various partners (member states, UN specialized agencies, private sector and civil society) in ensuring smooth coordination of the practical establishment of the information society around the globe will also be at the heart of the Summit and its preparation.

The anticipated outcome of the Summit is to develop and foster a clear statement of political will and a concrete plan of action for achieving the goals of the Information Society, while fully reflecting all the different interests at stake.

The first phase of WSIS took place in Geneva. It was hosted by the Government of Switzerland from 10 to 12 December 2003. The second phase took place in Tunis, hosted by the Government of Tunisia, from 16 to 18 November 2005. It is likely that the outcomes from these two phases of the Summit will carry over into future conferences and summits.

#### How Does the WSIS Process Work?

The WSIS is a joint initiative of the International Telecommunications Union (ITU) and the United Nations (UN). Preparation for WSIS consisted of Preparatory Committee (PrepCom) and Regional meetings. The African Regional Conference was held in Bamako, Mali, from 26 to 30 May, 2002. Other meetings have been held since then covering all regions of the world. The first Preparatory Committee meeting was held in Geneva in 2002, the second one held in February 2003, the third and final held just before the Tunis phase in September 2005.

#### Why Should Africa be Involved?

The Planned Actions that are adopted at the meetings of the WSIS will have a profound impact on Africa's development. It is important for all sectors of African

<sup>2</sup>. Adapted from the African Civil Society WSIS site: [www.wsis-cs.org/africa/whatis.shtml](http://www.wsis-cs.org/africa/whatis.shtml)

society, from governments to educationalists and civil society organizations, to drive the process in a way that will benefit everyone in society and will not reinforce the development divide between rich and poor nations.

### 1.3 The e-Rwanda Initiative

Part of the NICI-2010 Plan is the e-Rwanda project. This is targeted at specific initiatives of the sub-plans. The details of the e-Rwanda project which being supported by the World Bank as part of its assistance to the Rwanda Government is documented in Appendix 8 below.

### 1.4 E-Government Implementation Strategy

The objective is to develop an implementation strategy capable of serving as a suitable framework for facilitating the process of developing and rolling out Rwanda's e-Government Program within the context of the implementation of the NICI Plans. The development and implementation of the e-Government plan is to aid the process of developing for Rwanda a fully functional e-Government system that can improve service delivery to citizens and businesses, and make the operation of Government systems more efficient and cost-effective.

Details of the e-Government implementation strategy are documented in Appendix 7 below. The objective is to develop an implementation strategy capable of serving as a suitable framework for facilitating the process of developing and rolling out Rwanda's e-Government Program within the context of the implementation of the NICI Plans. The ultimate goal is to develop and implement for Rwanda a citizen-centered, fully functional and integrated Government-to-citizen (G2C), Government-to-business (G2B) and Government-to-Government (G2G) electronic Government. Details of the e-Government implementation strategy are documented in Appendix 7 below.

### 1.5 The Integrated Framework (MINICOM)

The Integrated Framework (IF) is an initiative of the World Bank, which works with MINICOM as its chief implementation partner in Rwanda. The objective of the Integrated Framework is to promote trade and investment in Rwanda. The first phase of the Integrated Framework consisted of a study that identi-

fied several areas for trade promotion in Rwanda and looked at barriers to the growth of trade in these areas. After analyzing the barriers to trade, the IF outputted various recommendations for actions to improve trade in all areas, including ICT. In relation to ICT the IF first talks about some of the major goals set in order to promote growth of the ICT sector and the progress that has been made to date. Then it indicates the way forward by presenting various recommendations for the Government to pursue, particularly on increasing productivity in traditional sectors.

The framework looks at the public sector, policy reform and human development. The assumption here is that the creation of a thriving, competitive private sector is dependent on policy and sector liberalization. In addition, it is acknowledged that development of ICT infrastructure is achieved after a competitive market has been established. The latter addresses ways of assisting the traditional sectors to take advantage of ICT. The following are a few details relating to ICT as addressed by the Integrated Framework.

#### Public Sector and Policy Reform Goals

The Government of Rwanda is committed to the legislative reform required to bring about growth in the ICT sector. Specifically this includes a commitment to pass laws to establish an autonomous telecommunications regulatory body. The Government is also committed to creating a coordinated plan for ICT development.

In addition to legislative and policy reform, there are specific projects that the Government plans to implement. One of these is to set up Public Information Kiosks (PIKs). Not only will these kiosks serve as public access points for information on a range of subjects of interest to the public, but they will also be integral in assisting the traditional sectors to take advantage of developments in ICT.

There are also several goals stated in the plan designed to promote involvement of the private sector within the ICT sector. These include special tax instruments and incentive packages to kick-start the ICT production sector. The Government of Rwanda hopes the country will be able to tap into the worldwide, multi-million dollar offshore software development industry. This would be accomplished by promoting joint ventures between local and foreign software houses to facilitate rapid growth in the software industry and knowledge transfer.

There are also specific goals for ICT infrastructure development, which include:

- The creation of a comprehensive program to install public telephone access systems and Multipurpose Community Telecenters in rural communities.
- The development of a telecommunication infrastructure digitization program.
- The implementation of a special initiative aimed at spreading Internet access, by promoting and facilitating a competitive and vibrant Internet Service Provider (ISP) environment in Rwanda.

#### Public Sector and Policy Reform Progress

*Legislative Reform:* The Government of Rwanda has made significant progress in its commitment to enact policy and legislative reform. In October 2000, Parliament passed the Multi-Sector Regulatory Law. This was the first step to move from regulation by the Central Government to independent regulation of the utilities sector. This law defines the individual roles of the regulator and of relevant Government ministries.

Another objective of this law was the creation of a Regulatory Agency to provide the Regulatory Board with administrative and enforcement support for all aspects of utility regulation. In addition to the Multi-Sector Regulatory Law, the Government of Rwanda has passed a separate Telecommunications Law.

*Institution Building and Privatization:* Several institutions have been created to enable private sector investment in Rwandan telecommunications. Furthermore, the Government of Rwanda has also committed to the privatization of several state-owned enterprises, including RwandaTel, which was the sole provider of telephone services in Rwanda.

#### Human Development Goals

The Government of Rwanda would like to take advantage of its young population and turn it into an asset through various human development programs. One aspect of human development that the Government would like to pursue is to train people to work in computer assembly and repair sector.

In order to create incentives for people to pursue ICT training, there is a goal to make IT literacy a basic requirement for future employment and promotions within the Civil and Public Service. In addition, universities, colleges and the Ministry of Education are to increase the annual enrollment of students taking Business Professional level courses in universities

by 30% to 50%. Additional goals to foster human development in the ICT sector include setting up the Rwandan Workers College (RWC) and the National Vocational Training Commission (NVTC).

#### Human Development Progress

The key institutions that the Government has at its disposal are the National University of Rwanda and the Kigali Institute of Science and Technology (KIST). The student population of KIST grew from 209 in 1998 to 3,304 in 2003. Full-time students constitute 73% of the student population. Rwanda is also part of the African Virtual University (AVU), allowing Rwandan students to participate in lessons at international universities.

Another training initiative in Rwanda is the Imfundo Project, which is a new kind of public/private partnership dedicated to finding new ways to enhance educational opportunity in developing countries. The trial stage of the Imfundo initiative focuses on how ICT can improve education through in-service teacher training, using distance learning supported by ICT.

#### Legislative Reform and Sector Liberalization

While the Government of Rwanda has achieved important initial progress in ICT sector liberalization, there is still much to be done to ensure an open, transparent and predictable climate that will appeal to investors choosing locations for future projects. The passage of the Multi-Sector Regulatory Law which created an autonomous regulatory body and the subsequent passage of the Telecommunications Law were the initial steps necessary to create the right environment for a flourishing ICT sector, but further action is required to ensure that this environment continues to exist. Particularly, there needs to be institutional strengthening and the creation of parallel laws, particularly Competition Law and Intellectual Property Rights Law.

#### Human Development

The creation of a strong ICT human resource base has been a high priority for Rwanda since the decision to transform the country to a knowledge-based economy was made. Programs to develop human capital, in a concerted effort by the public sector, are planned. Examples include strengthening the capacity of public schools, encouraging ICT literacy for those in public service and finally by initiating a public education campaign.

## Assisting Traditional Sectors to Take Advantage of ICT Improvements

A majority of the population will, in the short to medium term, still rely on agricultural activity and thus will not be directly involved in the socio-economic revolution accompanying ICT adoption in Rwanda. However, ICT can still be used to promote increased efficiency in traditional sectors such as agriculture. It is important for the Government to prioritize projects that it has laid out to aid such sectors, such as the Public Information Kiosks (PIKs), the Community Electronic Information Kiosks (CEIKs), the Land Records Information System (LARIS).

### 1.6 Poverty Reduction Strategy Paper

In 2002, the Government of Rwanda prepared and published the Poverty Reduction Strategy Paper (PRSP) under the overall framework of Rwanda's development strategy captured in the *Vision 2020*. PRSP is Rwanda's

answer to poverty reduction and economic growth. It has been developed through a national consultative process in which the priorities of the poor have been addressed and technical analysis used to develop a set of key actions. It will form the basis of the national planning effort over the next decade, guiding Government expenditure and other actions. It will also be the framework within which communities, the private sector, civil society and external donors can form a partnership to reduce the acute poverty and deprivation of the people. The document will be updated every two years to accommodate new strategies to deal with poverty.

In the first Poverty Reduction Strategy Paper (PRSPI), six broad areas were identified to achieve poverty reduction:

- 1. Rural development and agricultural transformation.
- 2. Human development.
- 3. Economic infrastructure.



- 4. Governance.
- 5. Private sector development.
- 6. Institutional capacity-building.

The second Poverty Reduction Strategy Paper is in development. The NICI-2010 Plan will play a catalytic role to quicken the pace of development, reduce the cost of transactions and empower the poor with information to make informed decisions.

## 2.0 THE PLAN DEVELOPMENT PROCESS: THE ROLES PLAYED BY KEY ACTORS

A number of key actors and agencies played a crucial role in the NICI-2010 Plan development process. Some of these are described below:

### 2.1 The NICI-2010 Plan Task Force

The Government set up a multi-stakeholder Task Force to coordinate and mobilize national efforts to facilitate the development of the Plan. The work of the Task Force was facilitated by RITA and a team of Resource Persons and Committees.

### 2.2 The Rwanda Information Technology Authority (RITA)

RITA was tasked with the responsibility facilitating and coordinating the NICI-2010 Plan development process under the guidance of the Coordinating Committee and the National NICI-2010 Task Force. RITA's supervisory role included:

- Daily operational, follow-up and coordination issues.
- Establishment of necessary mailing lists.
- Maintenance of mailing lists (on-going).
- Liaison with the Task Force (TF), the Coordinating Committee (CC), the Cluster Working Groups (CWG), the Ministerial Planned Actions Committee (MSC) and Members and Consultants (ongoing).
- Minute-taking and support for the TF, CC, WGs and MSCs (ongoing).
- Identification of key Cluster/Sectoral stakeholders for interviews.
- Draft questionnaire for data collection needed to develop policies and objectives, as well as to write up Planned Action definitions.
- Review meetings with the Task Force and the Coordinating Committee.
- Participation in stakeholder workshops.

The parent Ministry, MININFRA, also supported the work on the elaboration of the NICI plan.

### 2.3 The Ministerial Planned Actions Committees/Cluster Working Groups

Key ICT and management staff at the ministries formed the Ministerial Planned Actions Committees to work on the NICI-2010 PLAN document. The Committees also included public sector organizations and the private sector, to make suggestions that would be all-encompassing, including all sectors of Rwandan society. This also applied to the Cluster Working Groups, though the Committee was made up of the Chairs and Vice-Chairs of the MSCs. Some of the tasks of the Ministerial Planned Actions Committees (MSCs) include:

- Familiarization with sector priorities.
- Familiarization with relevant sectoral issues in the NICI-2005 Plan.
- Identification of outstanding challenges.
- Prioritization of key issues.
- Presentation of proposed Planned Actions to WGs.
- Consultations with Sectoral Heads.
- Scheduling of meetings.
- Participation in stakeholder workshops.

### 2.4 The Team of Resource Persons

A team of local and international Resource Persons with varied expertise were engaged by RITA to work with the various committees and the NICI-2010 Task Force to develop and prepare the various drafts of the NICI-2010 Plan for consideration by the Task Force and RITA. This team is responsible for preparing the final draft of the Plan. Their roles, among others, include:

- Preparation of various work plans at different stages of the project.
- Development of questionnaire/s for data collection.
- Co-chairing of work groups (ongoing).
- Moderating of assigned WG/MSC mailing lists.
- Production of various drafts of the NICI-2010 Plan.
- Work with the TF and CC to structure the final NICI-2010 Plan document.
- Verification of all material included in the initial surveys.
- Production of the final NICI-2010 Plan.
- Participation in stakeholder workshops.

## APPENDIX 3: ELABORATING ON SOME PLAN IMPLEMENTATION ISSUES AND MECHANISMS

### 1.0 DOCUMENTING THE ROLES AND RESPONSIBILITIES OF KEY NICI-2010 IMPLEMENTATION ENTITIES

Due to the variety of Planned Actions to be implemented in the NICI-2010 Plan, it is important to define the roles and responsibilities of the key implementation agencies and entities. Details of the identified entities are described below:

#### 1.1 Rwanda Information Technology Authority (RITA)

RITA, as per its role as the national NICI implementation and coordinating agency, will be responsible for the following activities:

##### NICI-2010 Plan Implementation Management Unit

- Planning all NICI-2010 implementation phases, projects and activities.
- Coordinating between all parties and stakeholders on all NICI-2010 activities.
- Costing and budgeting: updating cost analysis and monitoring actual costs.
- Monitoring and evaluation of all project activities.

##### Government Portal Development

A number of the NICI-2010 Planned Actions are based on the development of portals or web sites. If each Ministry were to develop its own web site or portal, the result would be a lack of standardization, sites that are not jointly accessible and duplicated effort. RITA would be in a good position to avoid such problems by consolidating such activities under one Government Portal. Individual Ministries or Agencies would still be responsible for developing their own portals or sites but only through coordination with RITA.

##### Standards, Guidelines and Best Practices

With such a large number of ICT projects under way, it becomes critical to introduce and comply with standards and guidelines. These can ideally be set and monitored by RITA. Furthermore, RITA would be in a good position to promote good practices in such projects.

#### The Required Legal Framework

One of the key Planned Actions identified for NICI-2010 Plan is the establishment of the necessary legal framework needed for converting a large number of business processes in the Government and the private sector to modern info-technical standards. RITA's responsibilities include seeking legal counsel, and following up on the introduction and implementation of such laws and regulations.

#### Facilitating Partnerships

A critical success factor of the NICI-2010 Plan is a solid and sustainable partnership between the private and public sectors, as well as with the civil society. On their own, these entities may not form such partnerships. It remains the responsibility of RITA to facilitate partnerships.

#### Execution of Projects

A large number of the identified NICI-2010 Planned Actions are Government-based or are nationwide projects. It would be difficult to assign a specific owner such as a Ministry or an Agency to such projects. Such projects will fall under RITA's terms of reference.

#### 1.2 The National Computer Center

This entity is already in operation and has a key role to play in the implementation of the NICI-2010 Plan. The NCC processes national data and provide other technical consultancy services. The NCC is a key player in various Planned Actions that require such national processing.

#### 1.3 The Government and Specific Ministries

The Government of Rwanda is collectively the owner of NICI-2010 Plan. The Government also remains the catalyst for the NICI-2010 Plan's proper implementation by ensuring the following:

- The Government needs to ensure that the proper and efficient institutional structure is in place as a prerequisite for most of the NICI-2010 Plan activities.
- The Government is responsible for the initiation and implementation of the legal framework requirements.

- The Government should be the prime driver for mobilizing resources and securing funds, and allocating them as it sees fit for the implementation of the NICI-2010 Plan.
- The Government shall have a strong coordinating role between all stakeholders.
- The Government shall be responsible for initiating and cementing all partnerships required for implementation.
- The Government needs to raise awareness on the implementation of the NICI-2010 Plan and hence ensure its acceptance and the contribution and participation of all stakeholders and donors.
- Along with parties in the private sector and academia, the Government will be responsible for monitoring and evaluating the progress of the NICI-2010 Plan implementation.

Specifically, MININFRA and MINECOFIN have special roles to play, such as:

- Resource mobilization.
- Spearheading legal reforms for ICT.
- Spearheading regulatory reforms for ICT, in coordination with RURA.

MINECOFIN is concerned in particular with overseeing budgetary procedures, as was the case in other projects such as PRSP. The NICI-2010 Plan should be no exception. It is recommended that all ICT projects, within or outside NICI-2010 Plan, should be discussed with MINECOFIN to ensure that they are in alignment with the overall national budget and with NICI-2010 Plan requirements.

#### 1.4 The Private Sector

The private sector is a key player. It is one of the Government's main partners. Being the source of technology resources and experience, its participation and contribution are necessary and critical for the success of the implementation of the NICI-2010 Plan.

The following responsibilities are expected from this sector. The first set covers those that can be provided by the general private sector:

- To collaborate with the Government on key projects. This partnership not only ensures sustainability, but also creates the necessary mechanisms for continued improvements.
- To support national human resource development efforts and initiatives.

- Re-engineering of the business processes currently in place in order to cope with the requirements of NICI-2010 Plan.
- To develop openness to international trading practices and objectives.
- To advise on, and play an active role in, the implementation strategy.

The following responsibilities are specific to ICT companies:

- To transfer leading, cutting-edge technologies to Rwanda.
- To provide ICT skills development.
- To adopt ICT good practices and standards.

#### 1.5 International Organizations and Donors

International organizations have played an important role in the ongoing process of rejuvenating Rwanda. They have been crucial in developing visions that relate to various ICT or other initiatives in Rwanda and other countries. Their role has been invaluable in the launch of the NICI-2010 Plan. International Organizations are the main players in the field of analysis and collection of national data. Therefore, the function of International Organizations should include the following:

- To promote issues related to the NICI-2010 Plan through publications, conferences and seminars.
- To assist Rwanda in realizing the NICI-2010 Plan objectives.
- To introduce knowledge concepts, training and tools to facilitate the implementation of projects.
- To involve Rwanda in international ICT initiatives.

#### 1.6 The NGOs

NGOs vary widely in scope and objectives. Their contribution and participation in the NICI-2010 Plan is also crucial. Their role is as follows:

- To incorporate elements of the strategy in their activities when appropriate and relevant.
- To participate in generating aggregate demand for knowledge at the community level.
- To preserve indigenous knowledge and contribute to the development of local content.
- To participate in and contribute to the NICI-2010 Plan socio-economic objectives.
- Incorporate elements of NICI-2010 Plan in their activities.

- Advise and play an active role in the implementation strategy.

A key group is civil society (represented by the National Civil Society Platform). It represents a variety of NGO groups. Whenever the discussion centers on the Citizen, it is important to consider the role of NGOs in civil society.

## 1.7 The Educational Sector

The Education Sector's role is fundamental, as it covers general primary and secondary schooling, vocational training, university and special purpose education. The Education Sector's role includes the following:

- To introduce the concepts and culture of knowledge into their curricula, research and teaching methodologies.
- To advise on and play an active role in the implementation of the Plan.
- To develop effective and close cooperation with the private sector
- To be the custodian of both general formal education and ICT-specific education.
- To collaborate with the private sector in advancing technological research and innovation in Rwanda.
- To ensure new generations of the Rwandan workforce (ICT or otherwise) are ready for the envisaged knowledge-based economy.
- To assist the Government in its revision of the legal framework, as required by the NICI-2010 Plan.
- To be part of the process of human resource capacity-building. This is critical for the NICI-2010 Plan.

Table 1: Scheduling the Plan Implementation Phases

Year >>>	2006				2007				2008				2009				2010			
Quarters >>>	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Phase 1 Preliminary Activities																				
Phase 2 Consensus Building																				
Phase 3 Mobilize Resources																				
Phase 4: Implement the Planned Actions																				
Phase 5: Monitor and Evaluate Planned Actions																				

## 1.8 The Media

The media covers TV, radio, the press and increasingly, the web. Roles of the media include the following:

- To assist the public and private sector in raising technological awareness in Rwanda.
- To provide implementing entities with a medium through which to promote their aims, and gain acceptance of their main objectives.
- To assist academia and the private sector in the ongoing process of human capacity development.

Rwanda's media needs to be exploited in various aspects of the NICI-2010 Plan. Work has already been done in the establishment of the ICT Media Network, JourNet.

## 2.0 DOCUMENTING THE PHASES OF THE PLAN FOR NICI-2010 PLAN

The implementation of the NICI-2010 Plan will involve the following Phases, some of which will be executed in parallel:

- Phase 1: Preliminary Activities
- Phase 2: Consensus Building
- Phase 3: Mobilize Resources
- Phase 4: Implement the Planned Actions
- Phase 5: Monitor and Evaluate Planned Actions

Table 1 below presents the scheduling of these phases over the time-frame of the NICI-2010 Plan.

## 2.1 Description of the Phases

### 2.1.1. Phase 1 – Preliminary Activities

The implementation of the NICI-2010 Plan will involve a number of preliminary activities that need to be executed at the very start of the project.

*Duration:* around 12 months.

The scheduling of these activities are presented in Table 2 below:

Table 2: Broad Scheduling of the Activities of Phase 1

FIRST 24 WEEKS OF PROJECT (2006)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Mobilization																								
2	Set Up a Project Implementation Unit (PIU)																								
3	Establish a Project Management Framework																								
4	Develop Key Performance Indicators																								
5	Strengthen RITA's Institutional Capacity for the NICI II Plan																								
6	Launch NICI II																								
7	Set Up Task Forces																								
8	Set Up Legislative, Regulatory and Institutional Frameworks																								
9	Plan for Change Management and Transitional Arrangements																								
10	Develop the Communications/ Promotional Plans																								
11	Manage the Scope of NICI II and Control the Changes																								
12	Develop a Procurement Plan																								
13	Revise and Update the Implementation Plan																								

### 1. Mobilization

Mobilization is not to be confused with resource mobilization. Mobilization at this stage signifies the initial preparations needed to launch the implementation of the NICI-2010 Plan. This will involve the following activities:

- Define the institutional framework for the Project.
- Assign responsibilities.
- Secure initial resources.
- Update the Project Plan to manage Phase 1 Activities.

### 2. Set Up a Project Implementation Unit (PIU)

One of the key success factors in a project as ambitious as the NICI-2010 Plan, indeed in any project, is the establishment of a proper Project Management Framework (see below). The first step in establishing

such a framework is to establish a Project Management Unit (PIU).

The responsibility of the PIU will be to manage the NICI-2010 Plan implementation. Given that most of the Planned Actions will be implemented outside RITA, this unit will have a strong planning and co-ordinating role. It will also interface strongly with the team handling the monitoring and evaluation activities. It is anticipated that the newly established NICI Plan Coordination Unit (NPCU) of RITA will serve as the envisaged PIU.

### 3. Establish a Project Management Framework

Project management requires standards and guidelines to succeed. Since project management is a key require-

ment throughout the Government, it is hoped that establishing such a framework for the NICI-2010 Plan would be the basis of adoption of such a framework by other RITA projects or by other Government agencies.

A Project Management Framework would consist of the following components:

- The identification of sound project management methods and techniques and their dissemination as standards.
- The setting up of a project management office.
- The promotion of international PM certification for project managers throughout the Government.
- The use of suitable software for the planning and tracking of projects.
- The use of Enterprise level project-management solutions.
- The definition of a sound reporting and communications scheme that interfaces with other activities in the project such as performance indicator management (see Section 0), monitoring and evaluation, budgeting, etc.

#### **4. Develop Key Performance Indicators**

The overall project has several types of Key Performance Indicators. These are described below.

##### *The National Key Performance Indicators*

There are international standards for such KPIs. Furthermore, it would be the responsibility of the National Information Center and the Information Decision Support Center to develop and maintain such indicators. Since these are national indicators, they need to be identified at an early stage. This sub-phase is where such indicators can be identified.

##### *The Global NICI-2010 Plan Key Performance Indicators*

These KPIs relate to the overall performance of the NICI-2010 Plan. Such KPIs will measure financial issues, socio-economic indicators that relate to the NICI-2010 Plan, e-Readiness factors, project management and other operational indicators. Again, this is the sub-phase where such indicators need to be identified.

##### *Specific Planned Action Indicators*

Each project would have its own indicators. Indicators relating to quality control, timing, scope, management,

risks, etc, will need to be defined. However, since these indicators are project-specific, they need to be defined during the initial phases of each project, and not during this sub-phase.

#### **5. Strengthen RITA's Institutional Capacity for the NICI-2010 Plan**

RITA through its NPCU will play a key coordinating role in the implementation of the NICI-2010 Plan. The institutional capacity of RITA will need to be strengthened to enable it play this critical role.

#### **6. Launch NICI-2010 Plan**

During this sub-phase, stakeholders will be invited to a workshop. This workshop will be the first step in the long process of consensus building. The workshop will introduce the project, brainstorm the various requirements and come up with recommendations and commitments.

#### **7. Set Up Task Forces**

Set up one or more task forces that can address specific aspects of the Implementation Plan. Such task forces will coordinate their work through the entity established in the next and parallel Phase.

#### **8. Set Up Legislative, Regulatory and Institutional Frameworks**

This activity ensures that these frameworks are defined and implemented before the main implementation of Planned Actions takes place.

#### **9. Plan for Change Management and Transitional Arrangements**

The NICI-2010 Plan will bring about many changes. The approach towards change management should be defined during this Activity.

#### **10. Develop the Communications/Promotional Plans**

As in all successful projects, a good communications Plan ensures that time is not wasted, errors not committed and transparency is the basis of all interactions. The plan needs to be established during this Activity.

#### **11. Manage the Scope of the NICI-2010 Plan and Control the Changes**

Again, as in all successful projects, once the scope is defined, it is critical that it be managed carefully. Invariably, the scope will change. However, this Activity ensures that changes to the scope of NICI-2010 Plan (functions, time, costs, and responsibilities) are

all subject to a disciplined Change Control Procedure. It also follows that this procedure will be part of the Communications Plan identified in the previous Activity.

#### **12. Develop a Procurement Plan**

As there is a wide variety for equipment, software and services to be acquired during NICI-2010 Plan, it is important to start the preliminary phase with a plan for such procurements.

#### **13. Revise and Update the Implementation Plan**

Given the above activities, RITA can recommend revisions of the initial Implementation Plan and come up with a realistic plan of action.

### **2.2 Phase 2 – Gain the Consensus of Stakeholders and Champions**

The NICI-2010 Plan requires commitment and consensus from all stakeholders. The following Activities are needed and can be carried out in parallel with other Phases.

*Duration:* around 12 months (Jan to Dec 2006).

#### **1. Identify and Gain the Consensus of the NICI-2010 Plan's Stakeholders**

Stakeholders need to be identified and drawn into the project. Identification needs to be carried out as the very first step in the Project, in parallel with Phase 1 Activities.

Such entities as the following are presented as an initial list:

- Policy-makers in the Government.
- The Cabinet.
- The Parliament.
- The Central Bank.
- The Judiciary.
- The various Ministries and Agencies (as implementers or as beneficiaries).
- The private sector.
- International agencies.
- NGOs.
- The media.
- Academia.

The NICI-2005 process has already paved the way towards gaining stakeholder consensus by involving such stakeholders into its defining activities.



## 2. Identify the Champions

Champions are those stakeholders that have a direct interest in the success of the project. There is a need to identify current and potential champions for the project or its related activities. In general, these are mostly selected from stakeholders.

## 3. Implement Schemes for Consensus-Building

Develop schemes for building acceptance for the project and its aims as well as for winning the support of stakeholders and champions. Such schemes could be any of the followings:

- Workshops.
- Conferences.
- Focus group meetings.
- Websites that promote the concept, publicize the plans, and track progress.
- Publications such as newsletters, white papers, articles and reviews.
- Media promotions with the aim of reaching the citizen.
- Coordinate activities with other initiatives and projects that affect the NICI-2010 Plan, and which are affected by the NICI-2010 Plan.

## 4. Review Progress

As and when such activities take place, the project needs to be revised and updated, based on the contribution and feedback of stakeholders and champions.

## 2.3 Phase 3 – Mobilize Resources

A resource mobilization plan should cover various issues, including:

- The purpose of resource mobilization.
- The resource mobilization strategy for the NICI-2010 Plan.
- Analysis of past resource mobilization activities.
- Assessment of resource mobilization sources.
- NICI-2010 Plan resource requirements.
- Donor interest.
- Operational issues.
- Advocacy for resource mobilization.
- Risks and challenges in resource mobilization.

The implementation of the Resource Mobilization Plan takes place in Phase 3 of the NICI-2010 Plan.

Most of the resource mobilization activities of Phase 3 take place in year one (2006). Thereafter, the rest of

these activities are spread over the remaining years of the project (2007-2010).

As the total figure arrived at in the costing of the NICI-2010 Planned Actions is greater than the Government's allocation for ICT expenditure in general and NICI projects in particular, resource mobilization should be entrusted to MINECOFIN and MININFRA, who shall play a major role in meeting the demands of the NICI-2010 Planned Actions.

The following Activities are required in Phase 3:

### 1. Identification of Donors

A comprehensive list of donors needs to be drafted. This should include:

- Currently active donors.
- Donors that have participated in projects in the past.
- Prospective donors who are interested in launching new operations in Rwanda, specifically for the NICI-2010 Plan.

This is an ongoing process, which needs to be completed very early in the project and kept up to date through frequent surveys, visits and high focus meetings.

### 2. Update the Cost Analysis of NICI-2010 Planned Actions

The NICI-2010 Plan includes a comprehensive assessment of the costs of implementing the Planned Actions. However, the costs of the various Planned Actions are constantly changing. The reasons for the changes vary: changing technology, the launch of projects with differing scopes, etc. Furthermore, the projects need to be analyzed for their costs to be broken down by type of resource. This Activity has the aim of maintaining a constant vigil on all Planned Actions to be included in NICI-2010 Plan and assessing their costs on a regular basis.

Furthermore, and as part of the monitoring and evaluation activities of Phase 6, the analysis must include status reports on actual costs spent in the ongoing implementation effort. Therefore, the deliverable of this Activity is an ongoing budgetary analysis of the NICI-2010 Planned Actions, showing projected and actual costs for each solution.

## 3. Government Budgetary Analysis

Rwanda has prepared its Budget for the years 2005 and 2006. This budget needs to be analyzed in detail in terms of the following:

- The overall ICT expenditure of the Government.
- ICT expenditure broken down by Ministry or Agency.
- The budget allocated for projects that directly impact the NICI-2010 Planned Actions.

More importantly, the ICT budgets may not all be targeted towards the NICI-2010 Plan. Therefore, this Activity needs to break down the Government budget for ICT into two portions: one that will be spent on internal ICT requirements and the other that is meant for the NICI-2010 Plan.

## 4. Analysis of the Resource Gap

With the above two analyses ready (Government Budget and NICI-2010 Plan Resource Requirements), the entity in charge of the NICI-2010 Plan resource mobilization will be in a position to analyze the gap or the balance needed to implement the NICI-2010 Planned Actions. The result will update the initial preliminary analysis articulated in the Resource Mobilization Plan, and will become the basis of the next step, without which it cannot be executed.

## 5. Visit the Donors

With the full analysis of Government readiness to cover the NICI-2010 Plan and the Resource Requirements of the NICI-2010 Plan, the Government of Rwanda, aided by the implementing entity, can proceed with the ongoing task of approaching donors. It is during this stage that donors will be encouraged to select projects and commence with technical cooperation activities. The visits will include a presentation to and survey of the donors and deal with such information as:

- Presentation of NICI-2010 Planned Actions and Implementation Plans.
- Feedback on past projects.
- Recommendations for future projects.
- Identification of areas of interest.

The result of the visits will be a map charting the interests of the donors in the various Planned Actions for NICI-2010 Plan.

## 6. Donor Commitment

As and when donors commit to specific programs or projects, whether in part or in full, the implementing entity shall proceed to coordinate such commitments

with the specific Planned Actions and revise the project plans for such Planned Actions accordingly.

## 2.4 Phase 4 – Implement the Planned Actions

This phase involves the implementation of the Planned Actions of the NICI-2010 Plan from 2006 to 2010. A number of these actions are NICI-2005 rolled-over "work-in-progress" Planned Actions that were initiated before 2006. In addition, some of the new Planned Actions have already started.

## 2.5 Phase 5 – Monitoring and Evaluation of Implementation

One of the key requirements of proper project management is the process of monitoring the activities of the project and evaluating the results. This phase is a continuous process and not a single project. The process consists of a variety of activities as defined below.

### 1. Develop a Monitoring and Evaluation Plan

Looking forward to the start of Phase 6, the preliminary Phase must develop a plan for the monitoring and evaluation activities in that phase.

### 2. Training the Monitoring and Evaluation Team

The team would have already been identified in Phase 1 of the project (Preliminary Activities). The activities need to be defined and assigned to the team.

### 3. Implement an Automated Application for Monitoring and Evaluation

A database application will be developed to collect data about all Planned Actions during their implementation. Alternatively, an Enterprise Project Management server could control the projects. In either case, this sub-phase has the aim of implementing such a solution.

A system of data gathering and record-keeping will be established to trace and track all inputs and outputs related to the project. This will be linked to the database of the parent ministry and MINECOFIN, which is the central coordinating agency for all public projects. A feedback system will be included in the system so that corrective measures can be incorporated into the implementation process. During evaluation, the beneficiaries will identify the impact of the project on the overall goal.

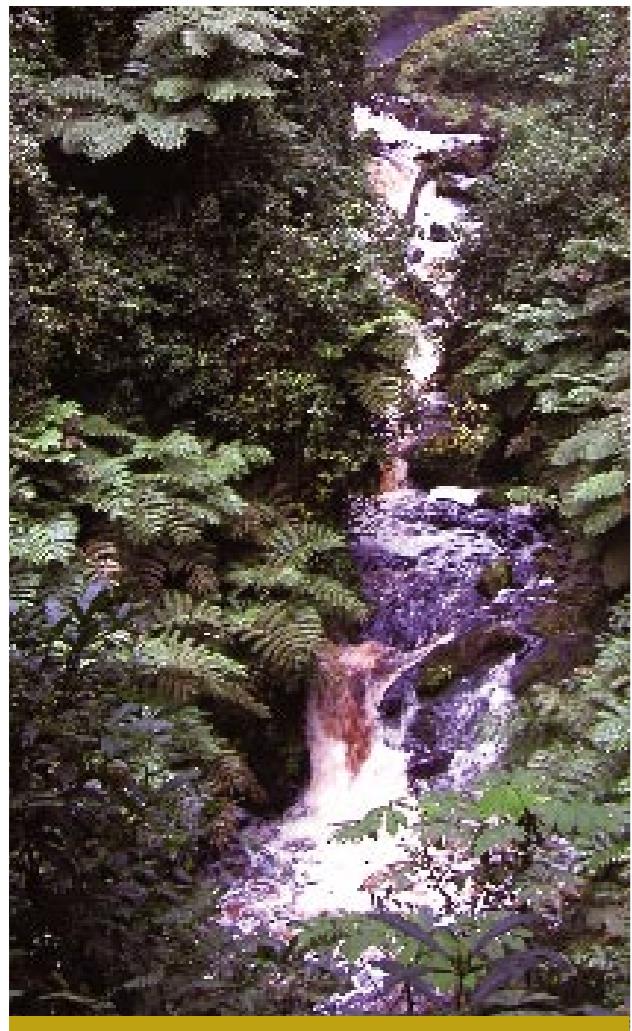
### 3.0 DOCUMENTING THE CRITICAL SUCCESS FACTORS FOR NICI-2010 PLAN

This section identifies and examine a number of the critical success factors necessary for the success of the implementation of the NICI-2010 Plan. The key factors are discussed below:

**Government Commitment and Leadership:** As demonstrated in the responsibilities of RITA and of the Government, the leadership of the Government in the NICI-2010 Plan is critical for its success. Without the commitment, drive and support of the Government, the NICI-2010 Plan will not meet its objectives.

**Involvement of the Active Stakeholders:** It is critical for the NICI-2010 Plan to be supported actively by all its stakeholders. Such support consists of active participation as well as contribution to the implementation of the Programs and Planned Actions.

**Administrative Reform and Development:** NICI-2010 Plan implementation is to be driven by the Govern-



ment. However, many partners are also required for successful results. Without a lean, agile and responsive public sector, many of the Planned Actions cannot be efficiently implemented. Administrative reform is a necessary condition for the NICI-2010 project. By this is meant a committed global re-engineering of the public sector's organization, legislation and human capacity.

**Pragmatic Implementation:** When national ICT policy or e-Strategy documents of other countries are reviewed, it will be found that they consist of a deep analysis of the current situation followed by brief recommendations. Recommendations usually are not realized as concrete projects. Therefore, the NICI-2010 Plan for Rwanda has concentrated on tracing a line from the definition of Pillars (with their related Policies and their Objectives) to the required Planned Actions. The following characteristics have been ensured for the Planned Actions, thus becoming Critical Success Factors:

- Practicality and pragmatism.
- Incremental implementation is proposed.
- Realistic budgetary and duration levels.
- Sustainable results and funding.
- Projects that address national issues of concern or priorities.
- Projects that are technologically feasible.

**Consensus and Commitment:** Large-scale national objectives invite disparity in the levels of acceptance by various parties. Consensus for the project as a whole must be secured. Consensus leads to higher commitment on the part of the stakeholders. Lack of commitment is one of the leading causes of failures of national projects, ICT or otherwise. Commitment applies to various aspects of ICT strategies: their launch and promotion, their funding, their sustenance and their improvement.

**A Properly Implemented Legal Framework:** A key prerequisite for all initiatives is the revision and modernization of the legal framework required for all ICT operations. One of the key recommendations is to develop a wide-ranging legal framework for such operations.

**Timely Establishment of the Recommended Project Implementation Unit:** As per the discussion above, the Project Implementation Unit (PIU) is critical for the success of the NICI-2010 Plan. Without such a unit and without it following sound and robust project management principles, the project will fail.

**Sustainable Programs and Planned Actions:** One of the risks of national strategies is a general pattern of "injecting" these projects into the national economy only to find them fall and falter in due course. The main cause is usually that these projects are isolated efforts or require constant rejuvenation. Rather than await crisis points to revive such projects, the NICI-2010 project must develop sustainable Planned Actions. This means that their results should be continuous and ongoing, and not just one-time outcomes. It also means that these Planned Actions should be integrated into the economy in such a manner that the economy will carry them and keep them operational.

**Learning Lessons from Other Countries:** Other countries have ventured into national ICT policies with varying degrees of success. Information about such experiences are available. In many instances, and through the international organizations promoting such drives, lessons from these projects can easily be learnt. This learning is a key factor for success. Most of the learning will be in socio-economic developmental areas, policy development and implementation methods.

**Using Best Practices for Implementation of ICT Projects:** Most ICT projects fail due to poor project management as well as lack of observation of general principles typical of such projects. This section identifies those practices that are fundamental to the success of the largest ICT project that Rwanda will undertake and can be seen as general good practice for the implementation of the Planned Actions.

1. *Implement ICT best practices:* In the proposed policies and their related strategies, it is crucial that the Government adopt a policy of using best practices. For example, implementing ICT projects requires a fair amount of expertise in software engineering, project and quality management. This is especially applicable to projects that go beyond traditional ICT applications oriented projects.

2. *Ownership of projects:* It is highly recommended that the beneficiaries of the Planned Actions be involved and committed to their projects.

3. *Concrete goals with small achievable steps:* For projects to succeed, an early buy-in is required. Setting up concrete goals that can be achieved incrementally provides the beneficiaries with recognizable results and ensures their future commitment.

4. *Regional perspectives and cooperation:* The region has seen a variety of successful initiatives. The Government should ensure that it provides the ICT sector with

enough support to allow for regional cooperation.

5. *Policies that avoid risks from globalization:* Globalization is a process. It is going on with or without countries that ignore it. It is a double-edged sword. It may be beneficial to Rwanda if Rwanda learns to integrate its policies with the objectives of globalization. The Government should avoid any policies that cause globalization to have adverse effects on socio-economic development.

6. *Issues at the National level:* Various initiatives made up of a "patchwork of projects" have succeeded in implementing such Planned Actions. Without a National perspective for such Planned Actions, many disadvantages arise. The Government should ensure that there is always an overall view of all policies and Planned Actions attempted within the NICI-2010 project.

7. *Evaluation by independent parties:* The NICI-2010 Plan for Rwanda needs to be monitored and evaluated both internally and externally. The objective assessment of an independent party would provide the necessary drive for higher quality and ensure that the project meets its objectives.

8. *Proper project management:* Most ICT projects suffer due to poor project management. Modern principles of project management should be followed, such as scope and quality management, time and cost management, communications, team building, etc. This is an area that the Government of Rwanda needs to assure is well covered. Project managers must be qualified before they are assigned Planned Actions to implement.

### 4.0 DOCUMENTING THE RISKS AND THE CHALLENGES

An initiative as large as the implementation of the NICI-2010 Plan is bound to be beset by various risks and challenges. This section identifies the key pitfalls that may inhibit project implementation:

• *Delays in the Legal Framework:* Delays in the development and implementation of the related legal framework will result in delays in the proper implementation of some Planned Actions. Many will resort to legacy legal procedures which will either prove to be difficult to automate or will require reworking in the future.

• *Ignoring Strategic Objectives:* It is common for ICT projects to be reduced in scope due to budget or schedule constraints. Such projects result in implementation of immediate day-to-day requirements and will fail to meet the strategic objectives set in the NICI-2010

Plan. (Response: apply proper project management techniques that forces Solution implementers to define strategic objectives and build them into the deliverables of the Solution. Proper monitoring and evaluation will also result in improved realization of objectives.)

- Ignoring the Importance of Partnerships:* The NICI-2010 project is based on partnership, coordination and national level activities. Many strategies are proposed that will require a single entity to handle them. One of the risks of the project is that such entities may slip into a territorial attitude prevalent in many public sector agencies. (Response: Empower the implementing entity to forge such partnerships and ensure their sustainability.)

- Excessive Checks and Controls:* The Public Sector has a built-in tendency to increase controls and regulation. Laws are issued over laws. Regulations curtail freedom of action and operation. (Response: It is important to keep the end in sight and ensure that laws and regulations issued to allow for progress should not work against such progress.)

- Lack of Funding:* The NICI-2010 Plan requires major funding. Applying inappropriate funding or curtailing funds in the middle of projects is damaging to these projects and their sustainability. (Response: Ensure that the resource mobilization effort in Phase 3 is well executed. Furthermore, ensure that the implementing entity is efficient in the updating and monitoring of all costing activities.)

- Human Capacity Issues:* The NICI-2010 Plan is labor intensive. Analysis of the cost types shows that hardware and related software products (not developed applications) form a lower proportion than usual. It follows that lack of human capacity or human capacity that is not properly trained for the various tasks will be a major detriment to the NICI-2010 Plan. (Response: Apply the “train before you start” policy, ensuring that all parties involved in Planned Actions are well selected and trained before the implementation starts.)

- Absorption Capacity:* The capacity to absorb funds will play a critical role in Rwanda’s quest for donor support. A distinction should be made between an acute shortage of resources and the capacity to absorb them efficiently. Despite the need for resources, it may turn out that a limited capacity to absorb funds efficiently is due in large extent to precarious institutions. Policy-makers in Rwanda need to better define the challenge

of absorption capacity, analytically and operationally. Donor funds should be included in the multi-annual budgeting of the Ministry of Economics and Finance. Their use should be considered in an overall framework, accounting for all resources utilized by the public budget, with careful monitoring of their implementation so that waste and improper diversion of resources can be avoided. The formation of coalitions of interested parties in favor of reforms is also important. It is not sufficient to examine Rwanda’s absorption capacity in a purely national context. Attention must also be given to the international context and to donors’ policy dynamics.

- Limited Level of Beneficiary Participation:* Beneficiaries may fail to get involved in their own projects. This is often the case when third parties are motivating these projects. This will result in poor acceptance, lack of commitment and a general poor result for the Planned Actions. (Response: Ensure that the beneficiaries are committed and involved before launching the project.)

- Lack of Data:* There is a general need for data of all types: e-Readiness, costing, manpower, etc. Without such data, resource mobilization will be inefficient, project management will be inefficient and the Government will not be able to monitor and evaluate the success of NICI-2010 Plan. (Response: Ensure that the Planned Actions related to data collection are classed as top priority Planned Actions. Furthermore, ensure that the practice of continuing performance measurement is applied in all projects.)

- More Focus on Technology and Automation than on Efficient Processes:* A traditional challenge for the ICT industry is to avoid concentrating on implementing technology at the expense of automating efficient business processes. This has many adverse effects such as poor results, inefficient processes, excessive costs, etc. (Response: Ensure the focus is on efficient business processes before ICT is applied to enable such processes.)

- Parallel Execution:* It has already been observed that some projects are already ongoing and they represent a narrower implementation than that proposed in the NICI-2010 Plan. In the future, this may also arise if a Ministry proceeds with its own projects, bypassing the global planning for NICI-2010 Plan. (Response: Ensure that the RITA coordinates all such efforts and avoids parallel execution or duplication of projects.)

## APPENDIX 4: GUIDELINES FOR MAKING CHANGES

### Introduction

The NICI-2010 Plan has in-built flexibility that allows for Plan modifications and revisions at various levels subject to some specific guidelines.

The guidelines provide details of which level of the Plan can be subject to changes (modification or revision); the possible types of changes, the acceptable grounds for making the required changes; who can authorize or make changes; and whether or not the changes are to be notified and if so, by whom.

Presented below are the Plan modification details in relation to what is possible at each of the levels of the Plan.

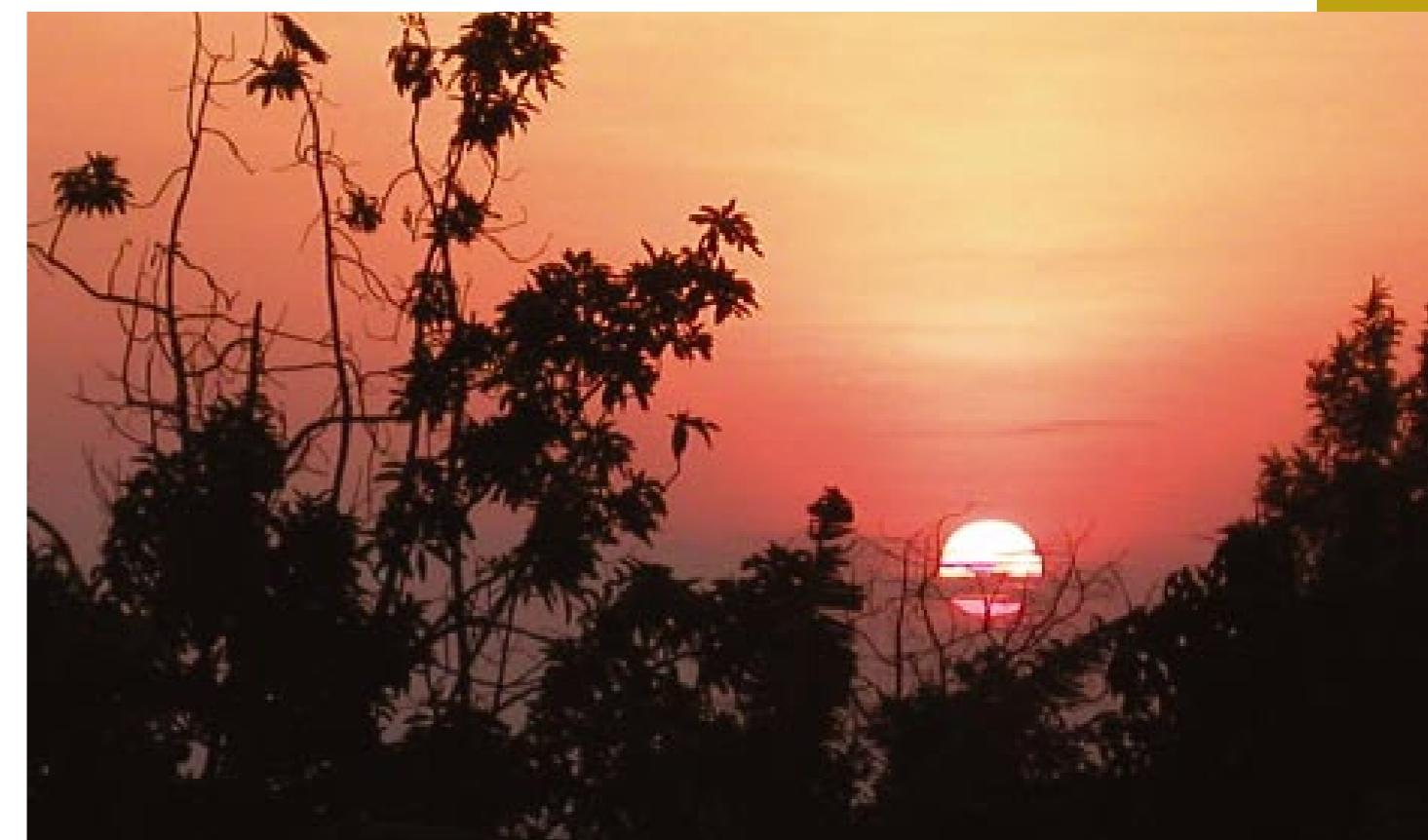
### The Ten Pillars (Sub-plan) Level

The Ten Pillars, representing the areas of focus of the sub-plans, provide the basis of the NICI-2010 Plan, so they are not subject to modification or revision. Because the Ten Pillars (sub-plans) form the cornerstone of the Plan, the sub-plans cannot be changed, either in scope or content.

### The Government Policy Commitments Level

The Government policy commitments, as they relate to each of the areas of focus of the sub-plans, are part of Government policy approved by the Cabinet. The premise underlying the development of the NICI-2010 Plan is that the GOR’s ICT4D Policy Document provides details of the GOR policy commitments in relation to *what* needs to be done towards the realization of the *Vision for Rwanda* through the exploitation and development of ICTs and that the NICI-2010 Plan, which is based on these policy commitments, is intended to provide details of *how* these policy commitments can be translated into concrete programs and initiatives for implementation.

The NICI-2010 Plan, being the actualization of some of the policy commitments of Government, cannot in itself provide a framework for the modification or revision of these policy commitments. The flexibility of the Plan does not therefore allow for the modification or revision of Government policy commitments referred to in the Plan.



## Other Levels

The Plan modification details and possibilities as they relate to the other levels are presented in the table below.

Program Level	Program Goals/ Objectives Level	Planned Action Level	Time-Bound Measurable (TBM) Targets	Planned Action Implementation Agency
<b>Scope for Flexibility of Action During the Actual Implementation of the Plan</b>				
A given program identified for implementation within the Plan could, if the need arises, be enhanced, modified or scrapped as dictated by prevailing circumstances and constraints during the actual implementation of the Plan	Specific program goals/objectives could be adapted or revised to meet changing circumstances as the need arises	Specific Planned Action as per a given program can be expanded-on; enhanced, revised or scrapped during the actual implementation of the Plan	Every effort should be made to meet the Time-Bound Targets. Targets should therefore not be changed arbitrarily	A Planned Action assigned to a given implementation agency can be re-assigned to another agency if it is thought the new agency is in a better position to implement it
<b>Possible Types of Changes</b>				
Enhancement Modification Revision Move to next NICI Scrapping	Adaptation Modification Revision	Expansion Enhancement Modification Revision Moved to next NICI Scrapping	Deferring Enhancement Modification Revision Move to Next NICI	Reassignment
<b>Acceptable Grounds for Making Relevant Changes</b>				
Need for enhancement Need for modification Need for revision No longer relevant Not implementable Already implemented <i>Note: Lack of resources cannot be an acceptable ground for scrapping an entire Program</i>	Need for adaptation Need for modification Need for revision	Need for expansion Need for enhancement Need for modification Need for revision No longer relevant Not implementable Already implemented <i>Note: Lack of resources cannot be an acceptable ground for scrapping a Planned Action</i>	Need for enhancement Need for modification Need for revision No longer relevant Not implementable Already implemented <i>Note: Lack of resources cannot be an acceptable ground for not implementing and meeting a TBM</i>	The new Agency is in a better position to implement the Planned Action  <i>Note: Lack of resources cannot be an acceptable ground for not implementing and meeting a TBM</i>
Who can make changes	Should authorization be obtained	From whom should authorization be obtained	Are changes to be documented	Who is to document changes
RITA in consultation with the PRSC and the agency or organization that owns the program	Yes	The Cabinet – the ultimate owner of NICI-2010 Plan	Yes	The agency or organization that owns the program
RITA in consultation with the PRSC and the agency or organization that owns the program	Yes	PRSC	Yes	The agency or organization that owns the program
The Planned Action implementation agency	Yes	RITA	Yes	The Planned Action implementation agency
The implementation agency	Yes	RITA	Yes	The implementation agency
The old and new implementation agencies, by mutual agreement	Yes	RITA	Yes	The old and new implementation agencies

### Notes:

1. The ultimate owner of the NICI-2010 Plan is the Cabinet. The Cabinet is also the owner of the GOR ICT policies and strategies on which the NICI-2010 is based.
2. The Round Table Plan Review Meeting to be convened annually, to be chaired by H.E. the President, will among other things discuss the details of the Plan Implementation Status Report.

## APPENDIX 5: MONITORING, EVALUATION AND REPORTING FRAMEWORK

### Preamble

A key component of the NICI-2010 Plan implementation process is a Framework for facilitating the monitoring and evaluation (M&E) of the implementation of the programs, initiatives and their corresponding Action-Plans. This Framework has been approved by the Cabinet within the context of the NICI-2005 Plan to guide and facilitate the implementation of all the NICI Plans, including the NICI-2010 Plan.

This monitoring and evaluation process will ensure that the Plan objectives and targets are met as well as facilitate the taking of corrective measures if the stated targets, goals or objectives of programs, initiatives and Planned Actions are not being met or achieved during the time-frame of the NICI-2010 Plan. Some of the corrective measures may involve the drawing up of new programs, initiatives and plan-actions for implementation within the current NICI, or subsequent ones.

The NICI plan monitoring and evaluation process will facilitate the process of amending the details of the SUNRISE model to guide the identification and development of suitable programs for incorporation into subsequent NICI Plans. The monitoring and evaluation framework will therefore serve as the main driving force for facilitating transition from one NICI to another.

An outline of the Plan Monitoring, Evaluation and Reporting Framework is presented in the diagram below with the relevant details of the key components presented as follows:

### The Key Players of the Plan Monitoring and Evaluation Process

To facilitate and coordinate the Plan monitoring and evaluation (M&E) process, an enforceable bottom-up mechanism (detailed below) will be adopted, involving the participation of various key players, including the Program Execution and Co-ordination Committees (PECCs) of the Government Ministries and the PSOs; the NICI Plan Coordination Unit (NPCU) of RITA; and the Plan Review Standing Committee (PRSC). Also to play a key role in this process is the Round Table Plan Review Meeting to be convened annually and chaired by H.E. the President – the national ICT champion.

### Key Stages of the M&E Exercise

The actual Plan M&E exercise will involve three stages with each stage addressing a number of specific objectives.

#### Pre-Implementation M&E Exercise: Specific Objectives

- To establish that the details and the objectives of the Programs and the Planned Actions are well understood by those assigned within the Plan Implementation organizations and agencies to execute them.
- To establish those resource mobilization issues for the implementation of the programs and the associated Plan-Actions have been addressed or will be addressed during the implementation of these programs and Plan-Actions.
- To address the issue of program or Planned Action ownership by ensuring that, (where appropriate), an individual, team, unit, division or directorate has been identified within the Plan implementation organization to own a specific program or Plan-Action and to be responsible for its execution and reporting on its progress and completion to the relevant PECC.

#### During-Implementation M&E Exercise:

##### Specific Objectives

- To establish that the programs and Planned Actions are properly executed as per the program details, objectives and goals.
- To identify which indicators to use to monitor and evaluate the implementation of the programs.

#### Post-Implementation M&E Exercise

##### Specific Objectives

- To ensure that TBMs are implemented and due dates met.
- To determine what interventions to take at the organizational level if specific TBMs are not implemented, or their due dates are not met, and ensure these actions are taken.
- To determine appropriate sanctions to impose on the owners of programs or Planned Actions in the event of non-performance or non-delivery.

### The Plan Execution and Co-ordination Committees (PECCs)

The PECCs to be set up within each of the Government Ministries and PSOs (as per Plan-Action G1.1) will be

responsible for the on-going monitoring and evaluation of the implementation of the relevant programs, initiatives and plan-actions within the Ministries or PSOs. The PECCs will address the various objectives of the pre-, during- and post-implementation M&E exercises detailed above. For each Ministry or PSO, the PECC will undertake the following Plan monitoring and evaluation responsibilities:

- Monitor and evaluate the implementation of each of the Planned Actions by determining whether they are properly coordinated and executed and that the stated Time-Bound Measurable Targets of the Plan Actions have been realized.
- Identify Planned Actions that have not been executed by the due date or whose implementation has been delayed, as well as establish the reasons for the non-execution or delay in implementation of these programs, initiatives, or Plan Actions.
- Identify Planned Actions whose targets have not been realized by the due date and establish the reasons for this.
- Identify problems associated with the implementation of specific Planned Actions.
- Recommend specific interventions and actions to take to facilitate the implementation of delayed Planned Actions.
- Collect and analyze relevant Plan M&E data and information to document the status of the implementation of the programs, initiatives and their associated Plan-Actions.
- Prepare and submit to the NICI Plan Coordination Unit of RITA (RITA-NPCU) a *Bi-Annual Plan Implementation Progress Report* providing details of the Plan M&E exercise within the Ministry or PSO.

#### The NICI Plan Coordination Unit of RITA (RITA-NPCU)

RITA-NPCU will be responsible for coordinating the monitoring and evaluation of the national implementation of the NICI-2010 Plan. It will collaborate with the PECCs of the Government Ministries and PSOs, and will facilitate the Plan according to the relevant M&E data and reports, as they relate to the specific Ministries and PSOs.

In addition to the Plan M&E details from the PECCs, RITA-NPCU will also coordinate the evaluation and monitoring of the implementation of all other programs, initiatives and Planned Actions being implemented by the private sector, civil society and academic institutions.

RITA-NPCU as part of its responsibility will:

- Prepare and submit a *Consolidated Bi-Annual Plan Monitoring and Evaluation Report* to the Cabinet. This report will serve as a consolidated report based on the details of the *Bi-Annual Plan Implementation Progress Report* (produced by the various PECCs) and the details of other Plan monitoring and evaluation exercises undertaken by the RITA itself. The RITA *Consolidated Bi-Annual Plan Monitoring and Evaluation Report* will also contain recommendations to the Plan Review Standing Committee (PRSC) in relation to (i) how some of the documented Plan implementation problems could be tackled or overcome and (ii) what actions the PRSC should or could take to sanction non-performing Plan implementation agencies.
- Produce a quarterly *NICI-2010 Plan Status Bulletin* that will be used to report on (i) the status of ongoing NICI-2010 programs and initiatives in the various implementation agencies and sectors of the economy, (ii) details of programs, initiatives or Plan-Actions started, completed (on target), completed (not on target) or delayed in the various Plan implementation agencies since the publication of the last Bulletin and (iii) other specific details relating to the implementation of particular programs, initiatives or Plan-Actions. This Bulletin will be made available to all Government agencies, private sector organizations, the media and the public at large.
- Provide specific Plan M&E details on the status of the implementation of the Plan or a component of it (at program, initiative or Plan-Action level) based on inquiries made to it by any interested local or international organization, Government or non-governmental.

#### The Plan Review Standing Committee (PRSC)

This Standing Committee (with RITA serving as its Secretariat) will be responsible for overseeing the monitoring and evaluation of the implementation of the NICI-2010 Plan on behalf of the Cabinet. It will have the following membership:

- Senior Cabinet Ministers.
- The ICT Advisor to the President.
- RITA Executive Secretary.
- A head of a university/college.
- A representative from the private sector.
- A representative from the Labor Union.

The Committee will be responsible for:

- Advising the President, Cabinet and Parliament on the status of the implementation of the Plan as a whole. This will take place on an on-going basis.
- Preparing and submitting to the President and the Cabinet an *Annual Plan Implementation Status Report* based on the *Consolidated Bi-Annual Plan M&E Report* it receives from RITA and other Plan implementation status reports or information it might have commissioned or solicited from RITA or other sources.

#### Cabinet Ministers: Quarterly Cabinet Briefings

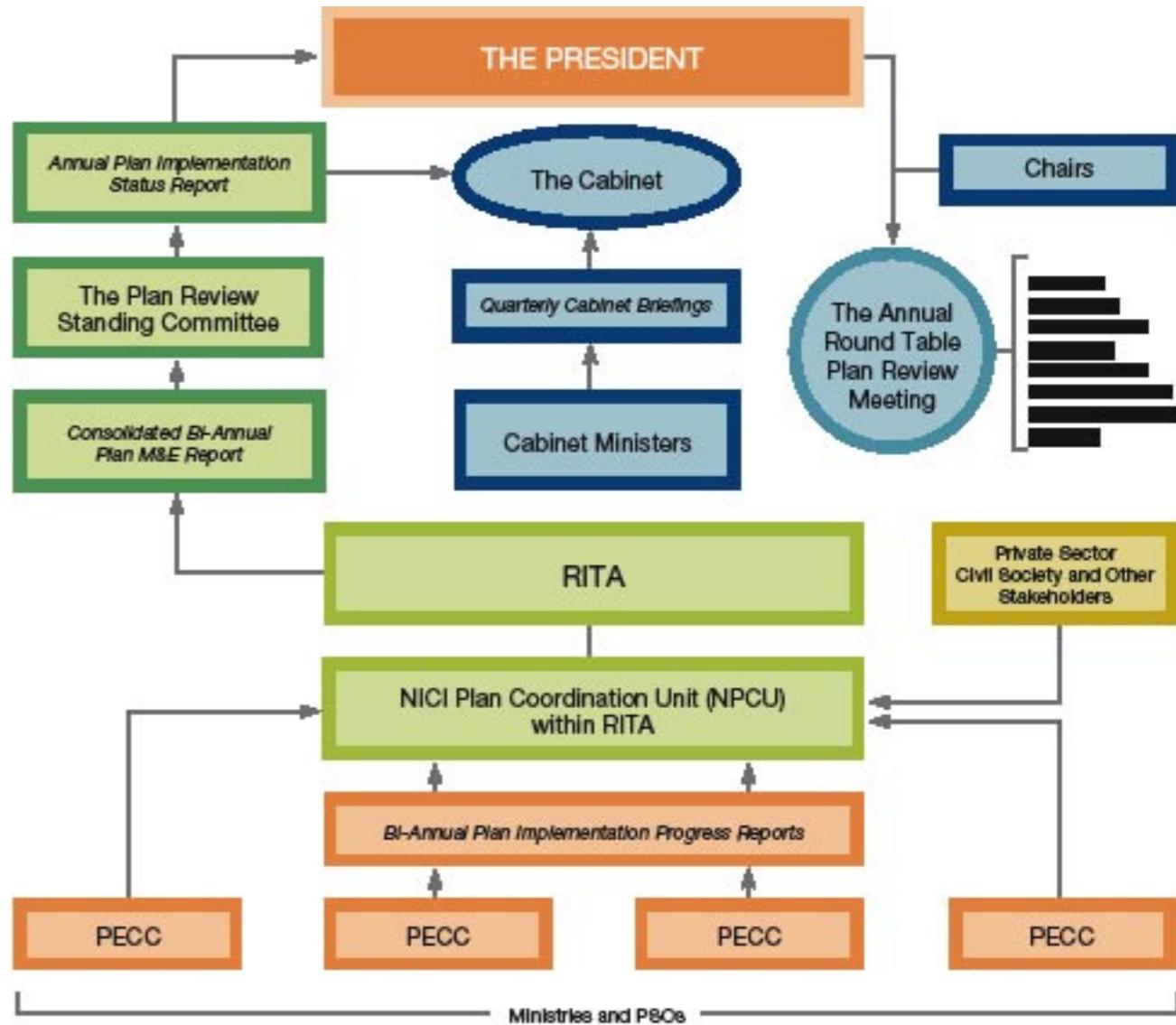
Each Cabinet Minister will on a quarterly basis brief Cabinet on the progress of the implementation of the

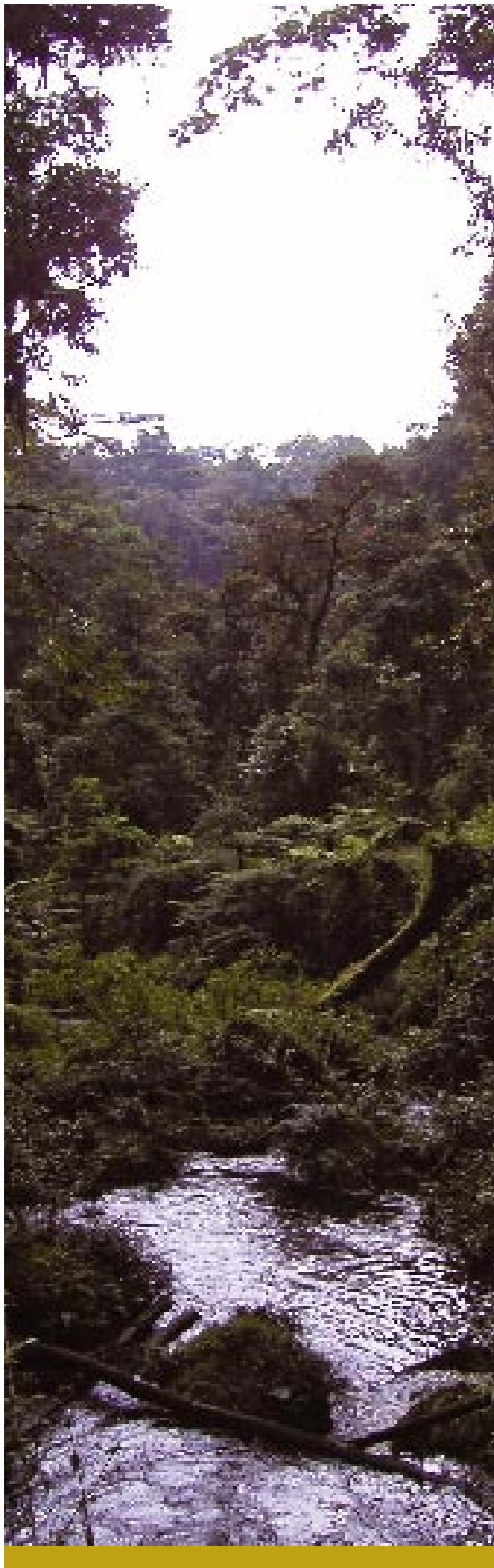
Plan within his/her Ministry and in relevant sectors within the Minister's jurisdiction. Ministers will be required to table a one-page briefing document detailing: new information since last briefing; programs, initiatives and Plan Actions in progress and their status; problems being encountered; funding successes and problems and other plan implementation matters.

#### Reporting on the Plan Execution Process: Types of Quarterly Ministerial Cabinet Briefings

As per the requirements of the Plan Monitoring, Evaluation and Reporting Framework, each Cabinet Minister is expected to brief Cabinet on a quarterly basis on the progress of the implementation of the Plan within

Figure 1: The Plan Monitoring, Evaluation and Reporting Framework





his/her Ministry and in relevant sectors within the Minister's jurisdiction. The various types of quarterly reports and their respective areas of focus are:

- First Quarter Report: This will be presented to Cabinet at beginning of the year and will be devoted to detailing what the relevant Ministry and its associated agencies and entities will be implementing in the year as per the NICI-2010 Plan.
- Second Quarter Report: This will be presented at the end of the second quarter and will serve as a progress report detailing programs and initiatives in progress and their status, funding issues and problems encountered and how they will be resolved.
- Third Quarter Report: This will be presented at the end of the third quarter and will serve as a progress report on the implementation of the programs and initiatives.
- Fourth Quarter Report: This will be presented at the end of the fourth quarter and in addition to serving as a progress report, will also document what has been achieved in the year as per the implementation of the identified programs and initiatives.

#### **The Annual Round Table Plan Review Meeting**

The Plan Implementation Status Report to be prepared by the Plan Review Standing Committee (PRSC) and submitted to the President and the Cabinet will form the basis for the Annual Round Table Plan Review Meeting, which will be chaired by H.E. The President.

This Round Table Meeting which will be attended by Cabinet Ministers, members of the Plan Review Standing Committee (PRSC), and other key stakeholders from the private sector and civil society, will review all aspects of the implementation of the Plan to date and come up with specific recommendations on how to address identified problems as well as to improve all aspects relating to the effective implementation of the Plan.

This meeting will also have the power to sanction or reprimand non-performing Plan implementation agencies.

## **APPENDIX 6: COSTING AND FUNDING ISSUES**

### **1.0 COSTING THE IMPLEMENTATION OF THE NICI-2010 PLAN**

#### **1.1 Preamble**

It is neither possible nor realistic to cost specific programs and initiatives (Planned Actions) of the NICI-2010 Plan. The premise is that a number of the capital intensive and major programs and initiatives of the Plan will during the actual implementation of the Plan require the development a project implementation report which among other things will provide detailed cost figures. All that is possible at this level of the development of the Plan is to provide consolidated "projected cost" figures for each of the sub-plans.

Also, rapid technological advances in the world-wide ICT industry will lead occasionally to changes in the cost of ICT-related products and services (in most cases, these advances result in lower procurement costs). Because of this situation, it is anticipated that project costing is not likely to remain fixed over time. There is therefore the need to continuously revise implementation costs of the programs and initiatives of the Plan, and for that matter the implementation cost of the Plan as a whole.

Plan costing done at the beginning of the implementation of the Plan is not likely to hold in a year or two. For these and other reasons, the "projected estimated cost" approach detailed below is adopted. This approach seems to be the most realistic method of gauging the "probable estimated cost" of the Plan.

The NICI-2010 Plan comprises two types of Planned Actions: new Planned Actions and rolled-over Planned Actions from the NICI-2005 Plan. Different methods were used for computing the "probable estimated cost" of these two broad types of Planned Actions.

#### **The "Rough Cost" Approach**

The "rough-cost" approach adopted for estimating the cost of implementing the NICI-2010 Planned Actions is aimed at obtaining a "back of the envelope" estimate of the "projected cost" of implementing these initiatives. The steps used are: (i) first a rough cost estimate of implementing the new Planned Actions of the various sub-plans of the NICI-2010 Plan was computed; (ii) the estimated "cost" of implementing the NICI-2005

Planned Actions rolled over into the NICI-2010 Plan are computed for each of the sub-plans and (iii) based on the cost obtained in (i) and (ii) the combined estimated cost for each of the sub-plans in terms of both its new Planned Actions and the NICI-2005 rolled-over initiatives was arrived at.

#### **1.2 Costing the New Planned Actions of the NICI-2010 Plan**

Rather than define specific cost estimates, for each Planned Action a method is used that associates each Planned Action with a particular cost bracket. Seven cost brackets have been identified as detailed in Table 1 below.

Table 1: Costing Brackets in US Dollars

FROM	TO	BRACKET	MIDPOINT
0	200,000	A	100,000
200,001	500,000	B	350,000
500,001	800,000	C	650,000
800,001	1,000,000	D	900,000
1,000,001	3,000,000	E	2,000,000
3,000,001	5,000,000	F	4,000,000
5,000,001	9,000,000	G	7,000,000
9,000,001	15,000,000	H	12,000,000

To establish the cost bracket of each of the Planned Actions, they are classified into seven categories, and for each category, seven associated costing components have been identified. The proportion for each component is provided in the following table (*Note: for each row the total is 1.00*). These proportions allow for the breakdown of the overall costing by type of cost or by type of project.

**Table 2: Proportions for 7 Cost Types for 7 Types of Projects**

	HW Costs	Licensing Costs	Development Costs	Training Costs	Deployment Costs	Consulting Costs	Material Costs
Development Projects	0.20	0.60	0.10	0.10			
HW Projects	0.80	0.10			0.10		
Train Projects				0.80			0.20
Data Projects	0.30		0.10	0.05	0.55		
Institution Projects					0.20	0.80	
Material Projects	0.10		0.20				0.70
ICT Cons Projects			0.20			0.80	

Using the details above, the number of Planned Actions for each of the cost brackets (A, B, C, D, E, F, G, H) as it relates to each of the sub-plans, is tabulated in Table 3 below.

**Table 3: Breakdown of Solutions by Costing Bracket by Pillar**

Pillars	BUDGET								Grand Total
	A	B	C	D	E	F	G	H	
1. Education	2		4	1					7
2. Human Capacity-Building	1	1	2		1				5
3. Infrastructure, Equipment and Content	5	2	1	3		1	2	1	15
4. Economic Development	1	4	5	3					13
5. Social Development	5	4	6				1		16
6. e-Government and e-Governance	3	4	7	4	1		1		20
7. Private Sector Development	2	1	2	1	2				8
8. Rural and Community Access			2	3	1		2	1	9
9. Legal, Regulatory and Institutional Provisions and Standards	1	2	2	1					6
10. National Security, Law and Order				2	2				4
<b>Grand Total</b>	<b>20</b>	<b>18</b>	<b>27</b>	<b>21</b>	<b>8</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>103</b>

Using the costing details provided above, an estimated “rough” cost of implementing the new Planned Actions contained in each of the sub-plans of the NICI-2010 Plan are documented in Table 4 below.

**Table 4: Cost Breakdown by Pillar vs. Type of Cost**

Pillars	HW Value	License Value	Devel Value	Training Value	Implmt Value	ICT Cons Value	Material Value	Total
1. Education	200,000	380,000	1,560,000	910,000	370,000	800,000	1,580,000	5,800,000
2. Human Capacity-Building	0	200,000	600,000	1,700,000	250,000	600,000	400,000	3,750,000
3. Infrastructure, Equipment and Content	21,470,000	2,690,000	1,430,000	90,000	3,510,000	2,560,000	2,800,000	34,550,000
4. Economic Development	0	1,220,000	3,840,000	610,000	700,000	1,080,000	0	7,450,000
5. Social Development	0	3,080,000	9,570,000	1,540,000	1,690,000	1,920,000	0	17,800,000
6. e-Government and e-Governance	0	1,960,000	6,010,000	980,000	3,660,000	11,240,000	0	23,850,000
7. Private Sector Development	0	270,000	1,210,000	135,000	815,000	4,320,000	0	6,750,000

Pillars	HW Value	License Value	Devel Value	Training Value	Implmt Value	ICT Cons Value	Material Value	Total
8. Rural and Community Access	16,640,000	3,765,000	5,530,000	855,000	3,090,000	720,000	1,400,000	32,000,000
9. Legal, Regulatory and Institutional Provisions and Standards	195,000	180,000	895,000	122,500	447,500	1,160,000	0	3,000,000
10. National Security, Law and Order	0	580,000	1,740,000	290,000	870,000	2,320,000	0	5,800,000
<b>Totals</b>	<b>38,505,000</b>	<b>14,325,000</b>	<b>32,385,000</b>	<b>7,232,500</b>	<b>15,402,500</b>	<b>26,720,000</b>	<b>6,180,000</b>	<b>140,750,000</b>
	27.36%	10.18%	23.01%	5.14%	10.94%	18.98%	4.39%	100.00%

Alternatively, taking the details of Table 3 and using the estimated cost mid points in Table 1 the projected cost of implementing the new Plan actions of each of the sub-plans is as follows:

**Table 5: Cost Breakdown by Pillar vs. Type of Cost**

Pillars	HW Value	License Value	Devel Value	Training Value	Implmt Value	ICT Cons Value	Material Value	Total
1. Education	200,000	380,000	1,560,000	910,000	370,000	800,000	1,580,000	5,800,000
2. Human Capacity-Building	0	200,000	600,000	1,700,000	250,000	600,000	400,000	3,750,000
3. Infrastructure, Equipment and Content	21,470,000	2,690,000	1,430,000	90,000	3,510,000	2,560,000	2,800,000	34,550,000
4. Economic Development	0	1,220,000	3,840,000	610,000	700,000	1,080,000	0	7,450,000
5. Social Development	0	3,080,000	9,570,000	1,540,000	1,690,000	1,920,000	0	17,800,000
6. e-Government and e-Governance	0	1,960,000	6,010,000	980,000	3,660,000	11,240,000	0	23,850,000
7. Private Sector Development	0	270,000	1,210,000	135,000	815,000	4,320,000	0	6,750,000
8. Rural and Community Access	16,640,000	3,765,000	5,530,000	855,000	3,090,000	720,000	1,400,000	32,000,000
9. Legal, Regulatory and Institutional Provisions and Standards	195,000	180,000	895,000	122,500	447,500	1,160,000	0	3,000,000
10. National Security, Law and Order	0	580,000	1,740,000	290,000	870,000	2,320,000	0	5,800,000
<b>Totals</b>	<b>38,505,000</b>	<b>14,325,000</b>	<b>32,385,000</b>	<b>7,232,500</b>	<b>15,402,500</b>	<b>26,720,000</b>	<b>6,180,000</b>	<b>140,750,000</b>
	27.36%	10.18%	23.01%	5.14%	10.94%	18.98%	4.39%	100.00%

Taking an example, the *ICTs in Education Sub-plan* has seven new Planned Actions (two in cost bracket A, four in D and one in cost bracket E). Based on the midpoint of these cost brackets, the total estimated cost for the new Planned Actions of this sub-plan is computed as:

Cost Bracket	Number of Planned Actions	Mid-Point Cost (US\$)	Estimated Cost
A	2	100,000	200,000
D	4	900,000	3,600,000
E	1	2,000,000	2,000,000
<b>Total</b>			<b>5,800,000</b>

### 1.3 Costing the NICI-2005 Plan Roll-Overs

The NICI-2005 rolled-over Planned Actions were originally costed (estimated) in terms of their sub-plans in the NICI-2005 Plan. Reproduced below are the estimated costs as they relate to the original NICI-2005 sub-plans.

Table 6: The NICI-2005 Sub-Plans Cost Breakdown

SUB-PLANS	2001	2002	2003	2004	2005	TOTAL	%
HRD	15	45	52.5	22.5	15	150	30%
EDUC	10	30	35	15	10	100	20%
GOV	10	30	35	15	10	100	20%
CMN	7.5	22.5	26.25	11.25	7.5	75	15%
PRS	3.5	10.5	12.25	5.25	3.5	35	7%
FDI	2.5	7.5	8.75	3.75	2.5	25	5%
IFR	1	3	3.5	1.5	1	10	2%
LRI	0.5	1.5	1.75	0.75	0.5	5	1%
<b>Total</b>	<b>50</b>	<b>150</b>	<b>175</b>	<b>75</b>	<b>50</b>	<b>500</b>	

The programs and the initiatives of each of these sub-plans have, to some extent, already been implemented. Therefore, it would not be realistic to roll over the total estimated cost of each of the NICI-2005 sub-plans into the costing of the NICI-2010 Plan. Also, there is a need to take into account the following points when computing an appropriate proportionate cost for the roll-overs into the NICI-2010 Plan:

1. The NICI-2005 sub-plans differ in terms of their stages of implementation. In other words, the percentage of roll-overs differs from sub-plan to sub-plan. It is therefore necessary to incorporate into the computation of the rolled-over cost for each of the sub-plans a determination of the percentage of roll-overs.

2. Some of the roll-overs are works-in-progress, while others have yet to start. In this respect, not all roll-overs can be treated the same when it comes to computing their respective implementation cost within the NICI-2010 Plan. While the full NICI-2005 estimated cost (with some adjustments for cost depreciation) can be apportioned to the yet-to-start roll-over Planned Actions, this cannot be done for the “work-in-progress” roll-over Planned Actions, without taking into account the extent to which they have been implemented (i.e. the percentage implemented). The degree to which each of the “work-in-progress” roll-overs has been implemented must be taken into account when computing their roll-over cost. Some of the work-in-progress roll-overs are up to 75% implemented, while others are about 25% to 30% implemented; yet others

are about 45% to 60% implemented. Based on these figures, an average figure close to 50% was obtained; this figure was used in the cost computation for all the “work-in-progress” roll-overs.

3. The estimated cost for each NICI-2005 sub-plan, calculated in 2000, was based on the premise that “the costing done at the beginning of the implementation of the Plan is not likely to hold in a year or two. The quoted figure of US\$500 million for the entire plan is an “upper-bound” projection, and it is likely that the actual cost of the implementation of the Plan over the five-year period will be substantially less.” The rationale, therefore, is that the cost estimates for each sub-plan must be adjusted to reflect the anticipated fall in cost since 2000, when the original estimates were computed. Furthermore, the cost of capital-intensive (computer-resources) rolled-over Planned Actions would have fallen since 2000 as a result of the drop in prices of computer resources (hardware and software, and systems) and services as the technology advances.

4. The NICI-2005 sub-plans and those of NICI-2010 do not necessarily coincide, hence the need to integrate some of the sub-plans of the two Plans. This needs to be taken into account when computing and apportioning the rolled-over cost to each of the NICI-2010 sub-plans. For example, the rolled-over Planned Actions of the *FDI Sub-plan* of NICI-2005 Plan are integrated into the *PSD Sub-plan* of NICI-2010; and some of the rolled-over Planned Actions of the *CMN Sub-plan* of NICI-2005 are rolled into the *GOV Sub-plan* of NICI-

2010; with the others rolled into the *RCA Sub-plan* of the NICI-2010 Plan. Taking into account the above observations; the rolled-over cost of each of the sub-plans is computed in Table 7 below. These are combined

with the estimated cost of the new NICI-2010 Planned Actions (see Table 5) to obtain the total estimated cost of each of the sub-plans of the NICI-2010 Plan.

Table 7: Projected Estimated Combined Cost of New and Rolled over Planned Actions of NICI-2010 Plan

	NICI-2005 Cost Estimate Adjusted	Percent of P&I Rolled Over	Percent of Roll Overs (Work in Progress)	Percent of Roll Overs (Work to start.)	Estimated Cost (US\$ million) of Roll Overs (Adjusted for Cost Depreciation of 25%)	Estimated Cost of new NICI-2010 Planned Actions (US\$ million)	Combined Estimated Cost for NICI-2010 Plan (US\$ million)	Percent of Total Cost
EDU	100	98%	67%	30%	46	5.8	51.8	13.59%
HRD	150	95%	39%	56%	83	3.75	86.75	22.76%
IEC (IFR)	10	79%	71%	7%	3	34	37	9.71%
ECD	N/A	N/A	N/A	N/A	N/A	7.45	7.45	1.95%
SOC	N/A	N/A	N/A	N/A	N/A	17.8	17.8	4.67%
GOV (inc CMN)	150	70%	28%	42%	62	23.85	85.85	22.52%
PSD (inc FDI)	60	89%	21%	67%	35	6.75	41.75	10.95%
RCA (inc CMN)	25	91%	75%	17%	10	32	42	11.02%
LRI	5	61%	19%	43%	2	3	5	1.31%
NSL	N/A	N/A	N/A	N/A	N/A	5.8	5.8	1.52%
<b>Total</b>					<b>241</b>	<b>140.2</b>	<b>381.2</b>	<b>100%</b>

#### Descriptions:

- Column 1 shows how the sub-plans were integrated (for the purpose of costing the roll-overs).
- Column 2 provides details of the NICI-2005 cost estimates adjusted for the integration of the sub-plans.
- Column 3 provides the percentage of roll-overs from NICI-2005 to NICI-2010 for each of the sub-plans.
- Column 4 indicates the percentage of the roll-overs for each sub-plan that are “work-in-progress” roll-overs.
- Column 5 computes the estimated cost of the roll-overs while making cost adjustments (of 25%) to accommodate observation (iii) above.
- Column 6 provides the estimated cost of the new NICI-2010 Planned Actions.
- Column 7 gives the total (combined cost) for each of the sub-plans.

### 1.4 The NICI-2010 Plan Costing and Resource Mobilization Matrix

Given the total “projected cost” of the NICI-2010 Plan estimated at US\$381.2, a breakdown of the financial resource mobilization requirements on a year-by-year basis for each of the sub-plans of the NICI-2010 Plan is provided below for the purpose of demonstration. Also provided are the possible resource mobilization

sources for the projected US\$381.2 for implementing the Plan. The sources are GOR, International Development Agencies (IDAs); Other Funding Donors (OFDs) sources; Local and International Private Sector (LIPS) sources including FDI mobilization and other sources (including local and international NGOs, bilateral aid and assistance organizations, etc).

Table 8: Financial Resource Mobilization Requirements, by Year

SUB-PLAN	GOR		IDAS		OFDS		LIPS		OTHERS		TOTAL	
	Nominal (US\$ million)	%	Nominal (US\$ million)	%	Nominal (US\$ million)	%						
<b>Year 2006</b>												
EDU	3.108	60%	1.036	20%	0.518	10%	0.259	5%	0.259	5%	5.18	1.36
HRD	3.47	40%	2.6025	30%	1.30125	15%	0.8675	10%	0.43375	5%	8.675	2.28
IEC	1.85	50%	0.925	25%	0.555	15%	0.185	5%	0.185	5%	3.7	0.97
ECD	0.298	40%	0.2235	30%	0.11175	15%	0.0745	10%	0.03725	5%	0.745	0.2
SOC	0.89	50%	0.534	30%	0.089	5%	0.178	10%	0.089	5%	1.78	0.47
GOV	6.0095	70%	1.28775	15%	0.42925	5%	0.42925	5%	0.42925	5%	8.585	2.25
PSD	1.87875	45%	1.2525	30%	0.4175	10%	0.4175	10%	0.20875	5%	4.175	1.1
RCA	2.73	65%	0.63	15%	0.42	10%	0.21	5%	0.21	5%	4.2	1.1
LRI	0.3	60%	0.1	20%	0.05	10%	0.025	5%	0.025	5%	0.5	0.13
NSL	0.464	80%	0.058	10%	0.029	5%	0.0116	2%	0.0174	3%	0.58	0.15
<b>Sub-Total</b>	<b>21</b>		<b>8.7</b>		<b>3.9</b>		<b>2.7</b>		<b>1.9</b>		<b>38.12</b>	<b>10%</b>
<b>Year 2007</b>												
EDU	9.324	60%	3.108	20%	1.554	10%	0.777	5%	0.777	5%	15.54	4.08
HRD	10.41	40%	7.8075	30%	3.90375	15%	2.6025	10%	1.30125	5%	26.025	6.83
IEC	5.55	50%	2.775	25%	1.665	15%	0.555	5%	0.555	5%	11.1	2.91
ECD	0.894	40%	0.6705	30%	0.33525	15%	0.2235	10%	0.11175	5%	2.235	0.59
SOC	2.67	50%	1.602	30%	0.267	5%	0.534	10%	0.267	5%	5.34	1.4
GOV	18.0285	70%	3.86325	15%	1.28775	5%	1.28775	5%	1.28775	5%	25.755	6.76
PSD	5.63625	45%	3.7575	30%	1.2525	10%	1.2525	10%	0.62625	5%	12.525	3.29
RCA	8.19	65%	1.89	15%	1.26	10%	0.63	5%	0.63	5%	12.6	3.31
LRI	0.9	60%	0.3	20%	0.15	10%	0.075	5%	0.075	5%	1.5	0.39
NSL	1.392	80%	0.174	10%	0.087	5%	0.0348	2%	0.0522	3%	1.74	0.46
<b>Sub-Total</b>	<b>63</b>		<b>26</b>		<b>11.8</b>		<b>8</b>		<b>5.68</b>		<b>114.36</b>	<b>30%</b>
<b>Year 2008</b>												
EDU	10.878	60%	3.626	20%	1.813	10%	0.9065	5%	0.9065	5%	18.13	4.76
HRD	12.145	40%	9.10875	30%	4.554375	15%	3.03625	10%	1.518125	5%	30.3625	7.96
IEC	6.475	50%	3.2375	25%	1.9425	15%	0.6475	5%	0.6475	5%	12.95	3.4
ECD	1.043	40%	0.78225	30%	0.391125	15%	0.26075	10%	0.130375	5%	2.6075	0.68
SOC	3.115	50%	1.869	30%	0.3115	5%	0.623	10%	0.3115	5%	6.23	1.63
GOV	21.03325	70%	4.507125	15%	1.502375	5%	1.502375	5%	1.502375	5%	30.0475	7.88
PSD	6.575625	45%	4.38375	30%	1.46125	10%	1.46125	10%	0.730625	5%	14.6125	3.83
RCA	9.555	65%	2.205	15%	1.47	10%	0.735	5%	0.735	5%	14.7	3.86
LRI	1.05	60%	0.35	20%	0.175	10%	0.0875	5%	0.0875	5%	1.75	0.46
NSL	1.624	80%	0.203	10%	0.1015	5%	0.0406	2%	0.0609	3%	2.03	0.53
<b>Sub-Total</b>	<b>73.5</b>		<b>30.3</b>		<b>13.7</b>		<b>9.3</b>		<b>6.63</b>		<b>133.42</b>	<b>35%</b>

Year 2009												
EDU	4.662	60%	1.554	20%	0.777	10%	0.3885	5%	0.3885	5%	7.77	2.04
HRD	5.205	40%	3.90375	30%	1.951875	15%	1.30125	10%	0.650625	5%	13.0125	3.41
IEC	2.775	50%	1.3875	25%	0.8325	15%	0.2775	5%	0.2775	5%	5.55	1.46
ECD	0.447	40%	0.33525	30%	0.167625	15%	0.11175	10%	0.055875	5%	1.1175	0.29
SOC	1.335	50%	0.801	30%	0.1335	5%	0.267	10%	0.1335	5%	2.67	0.7
GOV	9.01425	70%	1.931625	15%	0.643875	5%	0.643875	5%	0.643875	5%	12.8775	3.38
PSD	2.818125	45%	1.87875	30%	0.62625	10%	0.62625	10%	0.313125	5%	6.2625	1.64
RCA	4.095	65%	0.945	15%	0.63	10%	0.315	5%	0.315	5%	6.3	1.65
LRI	0.45	60%	0.15	20%	0.075	10%	0.0375	5%	0.0375	5%	0.75	0.2
NSL	0.696	80%	0.087	10%	0.0435	5%	0.0174	2%	0.0261	3%	0.87	0.23
<b>Sub-Total</b>	<b>31.5</b>		<b>12.98</b>		<b>5.88</b>		<b>3.99</b>		<b>2.84</b>		<b>57.18</b>	<b>15%</b>
<b>Year 2010</b>												
EDU	3.108	60%	1.036	20%	0.518	10%	0.259	5%	0.259	5%	5.18	1.36
HRD	3.47	40%	2.6025	30%	1.30125	15%	0.8675	10%	0.43375	5%	8.675	2.28
IEC	1.85	50%	0.925	25%	0.555	15%	0.185	5%	0.185	5%	3.7	0.97
ECD	0.298	40%	0.2235	30%	0.11175	15%	0.0745	10%	0.03725	5%	0.745	0.2
SOC	0.89	50%	0.534	30%	0.089	5%	0.178	10%	0.089	5%	1.78	0.47
GOV	6.0095	70%	1.28775	15%	0.42925	5%	0.42925	5%	0.42925	5%	8.585	2.25
PSD	1.87875	45%	1.2525	30%	0.4175	10%	0.4175	10%	0.20875	5%	4.175	1.1
RCA	2.73	65%	0.63	15%	0.42	10%	0.21	5%	0.21	5%	4.2	

Table 10: Possible Total Cost Contributions/allocations (US\$ million)

SOURCES	NOMINAL	PERCENTAGE
Government of Rwanda (GOR)	209.98	55%
International Donor Agencies (IDAs) (Bilateral and Multilateral)	86.49	23%
Other Foreign Donors (OFDs)	39.21	10%
Local and International Private Sector (LIPS)	26.57	7%
Other Sources	18.9	5%
<b>TOTAL</b>	<b>381.2</b>	<b>100%</b>

### 1.5 Concluding Notes

It is worth pointing out again that the purpose for the costing exercise is not to arrive at how each proposed initiative will actually cost when implemented (this can be costed during the actual implementation) but rather to arrive at an indicative cost for the Plan, for the purpose of resource mobilization. The costing method used in the NICI-2010 Plan is aimed at arriving at an overall ball-park cost of the Plan.

### 2.0 The Rwandan ICT for Development (ICTfDev) Fund

1. It is proposed to set up the Rwandan ICT for Development (ICTfDev) Fund to mobilize resources to support the implementation of the programs and initiatives of NICI-2010 Plan. The activities of the Fund will be coordinated by a five-member Committee to be chaired by H.E. the President. The fundraising initiatives will be an important and integral component of the implementation of the Plan.

2. The premise is that although the majority of the funds for implementing the Plan is likely to come from Government sources as part of its expenditure provisions, as well as grants, tax and investment incentives to the private sector, the Rwanda Government alone will not be able to entirely fund the implementation of the NICI-2010 Plan. There is therefore the need to raise funds from other external and local sources to supplement Government efforts. Candidate external sources include: the International Development/Donor Agencies (IDAs), NGOs, International ICT-support Foundations (e.g. Ford Foundation, Bill & Melinda Gates Foundation etc), Bilateral Donor Countries, the UN Special Initiative for Africa, Private Donations etc.

3. Government's contribution to the Fund will consist of: (i) annual budgetary allocations for the implemen-

### APPENDIX 7: THE RWANDAN ELECTRONIC GOVERNMENT AND GOVERNANCE INITIATIVE (REGGI)

#### An Electronic Government Implementation Strategy and Action Plan for Rwanda

#### EXTRACTS FROM THE MAIN DOCUMENT

##### Preamble – The Need for Developing an e-Government Implementation Strategy and Action Plan

As part of the nation's ICT-led development vision, the Government of Rwanda (GOR) recognized the crucial role that information and communications technologies (ICTs) can play in facilitating Rwandans' socio-economic development process.

To achieve this vision, the Government developed a comprehensive integrated ICT-led socio-economic development policy and plans (the NICI-2005 and NICI-2010) set within the wider context of the developmental objectives of the country. This policy and the corresponding plans are aimed at accelerating

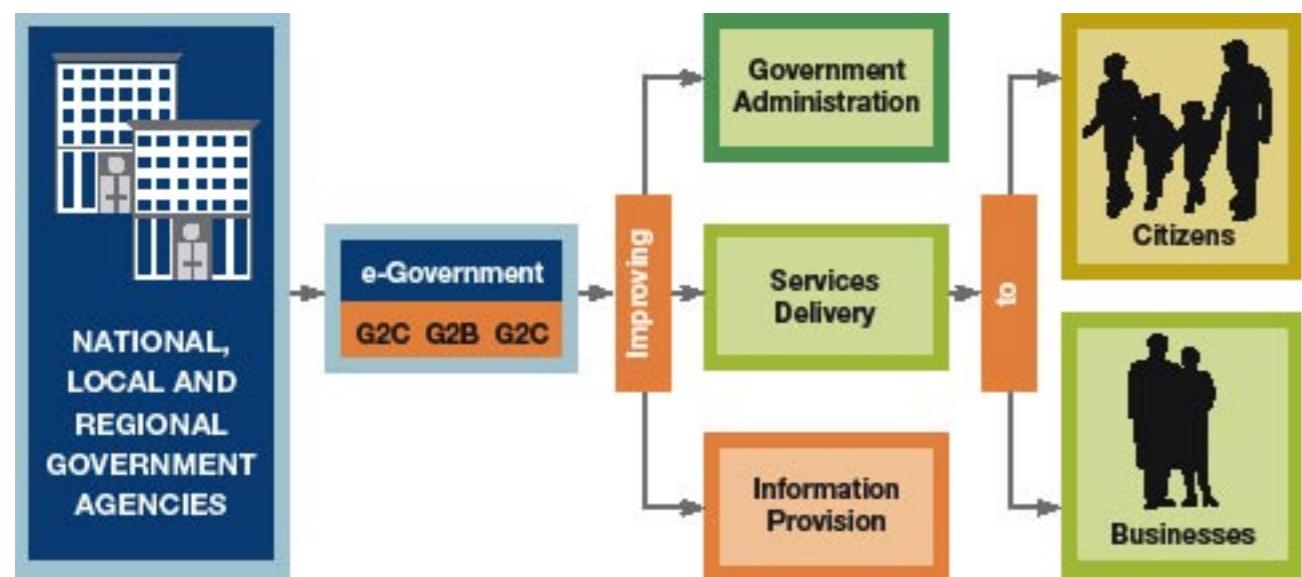
Rwanda's socio-economic development process towards the realization of the vision to transform the nation into an information-rich, knowledge-based society and economy within the time-span of 20 years.

As part of its commitment to pursue an ICT-led development agenda, the Government acknowledges the crucial role that ICTs can play in the delivery of Government services. ICTs can bring the Government closer to the people and facilitate the implementation of the Government's decentralization policy and programs. This will support administrative and service delivery activities and operations at different levels of the Government's administrative structure.

The Government has as part of the NICI-2005 Plan initiated the Rwandan Electronic Government and Governance Initiative (REGGI) – as a blue-print for rolling out Rwanda's e-Government and e-Governance strategy and action plans within the context of the



Figure 1: Developing Rwanda's e-Government System



implementation of the four NICI Plans (NICI-2005, NICI-2010, NICI-2015 and NICI-2020) over the envisaged 20 year life-span of the *Vision for Rwanda* (VfR).

The Government sees the implementation of the targeted initiatives, programs and projects under REGGI as much more than just the delivery of Government services on-line. Specifically, the initiative is designed to improve service delivery to the public, namely citizens and businesses, as well as transform and improve the efficiency of Government administration.

This report presents the details of the Rwandan e-Government Implementation Strategy to support the process of rolling out the e-Government programs and initiatives over the envisaged 20 years of the NICI process, as part of the REGGI initiative.

The details of the *e-Government and Governance Sub-plan* of NICI-2010 constitute an e-Government Action Plan for rolling out e-Government initiatives as part of the implementation of the NICI-2010 Plan.

The report also provides a framework within the context of the proposed e-Government implementation strategy for the development and implementation of relevant e-Government programs within the subsequent NICIs (NICI-2015 and NICI-2020), as part of the REGGI initiative.

### Summary of the Report

The details of the Report can be summarized as follows:

In Section 1.0, a case was made for developing and implementing a fully functional e-Government system for Rwanda – defining what is required.

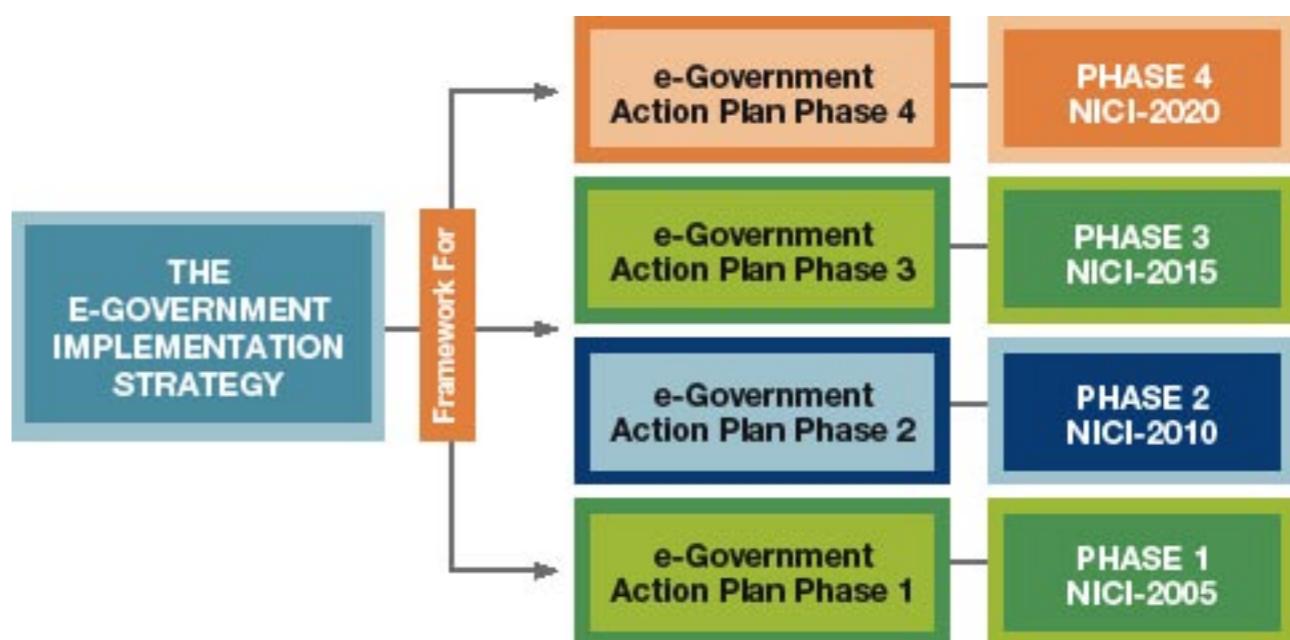
In Section 2.0, the details of what is required are explored and defined in terms of the functional components of the envisaged fully operational e-Government system for Rwanda. This is the framework for addressing the question of what needs to be done to deliver the required system, in Sections 3.0 and 4.0.

Specifically, Section 3.0 focuses on developing the proposed e-Government Implementation Strategy for Rwanda and is used as a framework for developing the details of the e-Government Action Plan (of the NICI-2005 and NICI-2010 Plans). The implementation of this Plan will enable Rwanda to move towards rolling out a fully operational e-Government system. The characteristics and features of this system are described in Section 2.0.

## 1.0 DEVELOPING RWANDA'S E-GOVERNMENT SYSTEM

The Rwandan e-Government and e-Governance Initiative (REGGI), within which the Government plans to roll out its e-Government programs over the next 20

Figure 2: Linking the REGGI, Implementation Strategy and Action Plan with the NICI Process



years, is aimed at transforming Government administration, information provision and service delivery through the deployment and exploitation of ICTs. The goal is to bring Government closer to the people through major improvements in the delivery of Government services and information-provision, in ways that are most convenient to citizens and businesses, while at the same time realizing efficiency gains, and streamlining Government processes and procedures.

Overall, the objectives of the REGGI initiative, which is driving the Government's e-Government Program, are:

- Improving Government administrative efficiency, effectiveness and productivity as well as information provision and service delivery to the public.
- Reducing administrative, operational and transactional costs of Government's administrative activities, service delivery functions and operations through reducing of operating inefficiencies, redundant spending and unnecessary excessive paperwork.
- Increasing Government's ability to serve citizens and businesses better through the enhancement and improvement in Government's responsiveness to citizens and businesses.
- Transform Government into a *citizen-centered* Government, as well as facilitate the process of bringing the Government closer to the people and making it easy for citizens to obtain services and interact with Government machinery and agencies.
- Providing a robust, flexible, and scalable, information and communications infrastructure to support intra- and inter-agency electronic service delivery and information exchange.

• Providing access to information and Government services by the public, enhancing good governance, and strengthening the democratic process.

### Linking the REGGI, the e-Government Implementation Strategy and Action Plan and the NICI Plans

Briefly, the e-Government Program is targeted at the deployment and the exploitation of ICTs within the civil and the public service to transform and improve the delivery of Government services; streamline, modernize and improve internal administrative processes and procedures within the public and civil service; reduce administrative, operational and transaction costs; as well as improve the efficiency and effectiveness of Government operations across the three tiers of Government (executive, legislative and the judiciary).

Broadly speaking, the REGGI initiative is aimed at transforming Government machinery to be more citizen-centered. The success of this initiative – a key and major component of which involves the rolling out of the e-Government Program – will depend on reforming and changing how Government works; how it generates and uses information to support its activities, operations and service delivery, and how it interacts with and serves citizens and businesses. It is recognized that the success of the REGGI initiative and for that matter the constituent e-Government Program will require a new and active partnership between Government, citizens

and businesses, with the Government playing a key and central role in this partnership.

The REGGI initiative is being implemented across the four NICI (NICI-2005, NICI-2010, NICI-2015 and NICI-2020) Plans over the 20-year period of the Rwandan ICT-led socio-economic development process.

The proposed e-Government Implementation Strategy developed and presented in this report is designed to guide the implementation of the e-Government Program component of the REGGI initiative, by serving as a framework for developing and rolling out the corresponding e-Government Action Plans as sub-plans of the main NICI Plans. It is envisaged that Rwanda will by 2020 achieve the implementation of a fully operational and integrated e-Government system.

### Developing the e-Government Implementation Strategy

The objective is to develop an implementation strategy capable of serving as a suitable framework for facilitating the process of developing and rolling out Rwanda's e-Government Program within the context of the implementation of the NICI Plans. The development and implementation of the e-Government plans as sub-plans of the NICI Plans to roll out the e-Government programs is to aid the process of developing for Rwanda a fully functional e-Government system that can improve service delivery to citizens and businesses and make the operations of Government systems more efficient and cost effective.

The ultimate goal is to develop and implement for Rwanda a citizen-centered, fully functional and integrated Government-to-citizen (G2C), Government-to-business (G2B) and Government-to-Government (G2G) electronic Government system that will do the following:

- Make it easier for citizens and businesses to obtain services and information, and interact with Government.
- Improve Government efficiency and effectiveness.
- Improve Government response to the needs of citizens and business, and bring Government closer to its citizens.
- Reduce and eventually eliminate operational inefficiency in Government operations and activities.
- Reduce redundancy, spending and excessive paperwork.

To facilitate the process of developing the details of the proposed e-Government Implementation Strategy, the next section presents the details of a fully operational e-Government system based on a functional model.

### 2.0 Elements of the Proposed e-Government System Model for Rwanda

This section describes details of the proposed e-Government system model for Rwanda to guide the development of the proposed e-Government Implementation Strategy. Starting with a description of the elements of a fully functional e-Government system, a description is provided of each of the constituent sub-systems that are required to develop and roll out e-Government services.

#### 2.1 The e-Government Functional Model

The proposed functional model of a fully functional e-Government system as illustrated on the right is made up of three major components: the access architecture, the applications architecture, and the key actors. The access architecture consists of the public access channels (PACs) and the physical communications infrastructure. The applications infrastructure is made up of: back office systems (BOSs); public interface services applications (PISAs); the front-end system (FES); the system management architecture and platform (SMAP); the supporting systems, platforms and processes (SSPPs), and a data center. Each of these component sub-systems is described in detail below.

#### The Physical Communications Infrastructure

The physical communication infrastructure of the e-Government system is crucial for the delivery of services to the public as well as for facilitating inter- and intra-departmental as well as inter- and intra-agency communications, information sharing and interchange; and the sharing of physical network resources. This infrastructure encompasses two main components: a communications backbone: interlinking organizational and corporate networks of Government Ministries and Public Sector Organizations (PSOs) and an infrastructure for providing public access (public access channel) to e-Government services.

Figure 3: A Functional e-Government System Model for Rwanda

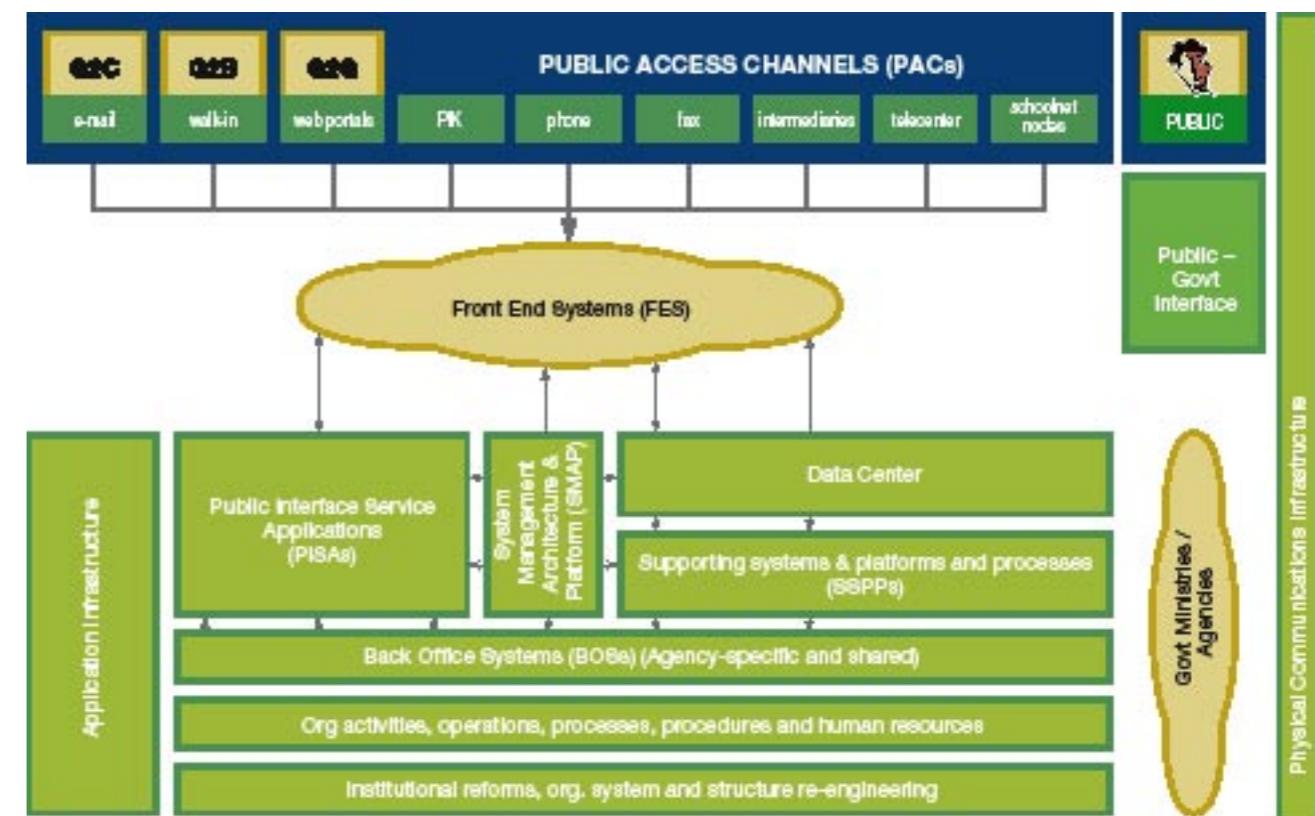
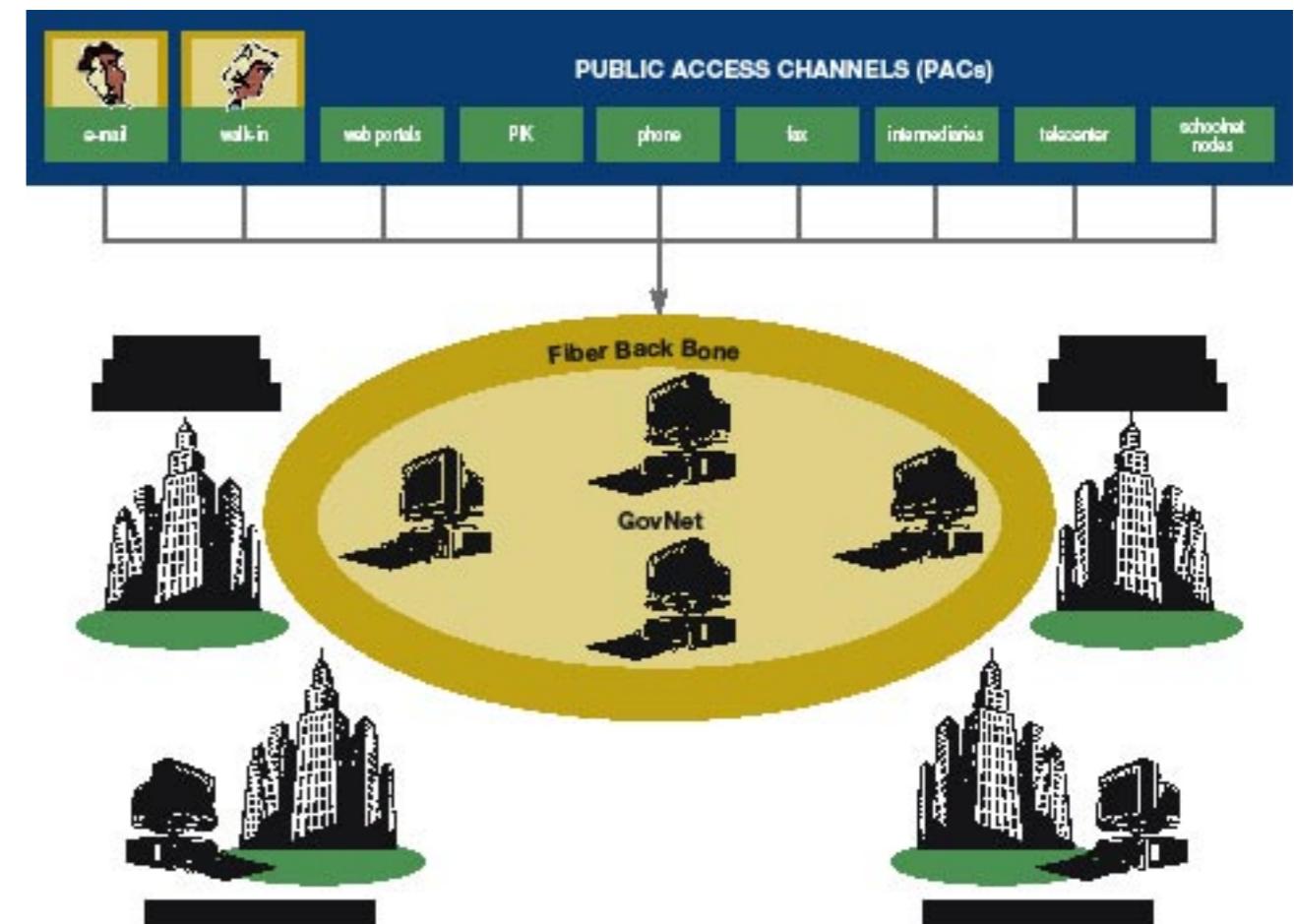


Figure 4: e-Gov: Physical Communications Structure (Access, Productivity, Networks)



### Proposed Alternative GovNet Configurations

Figure 5: GovNet Configuration 1 – GovNet as a Sub-net of KMN

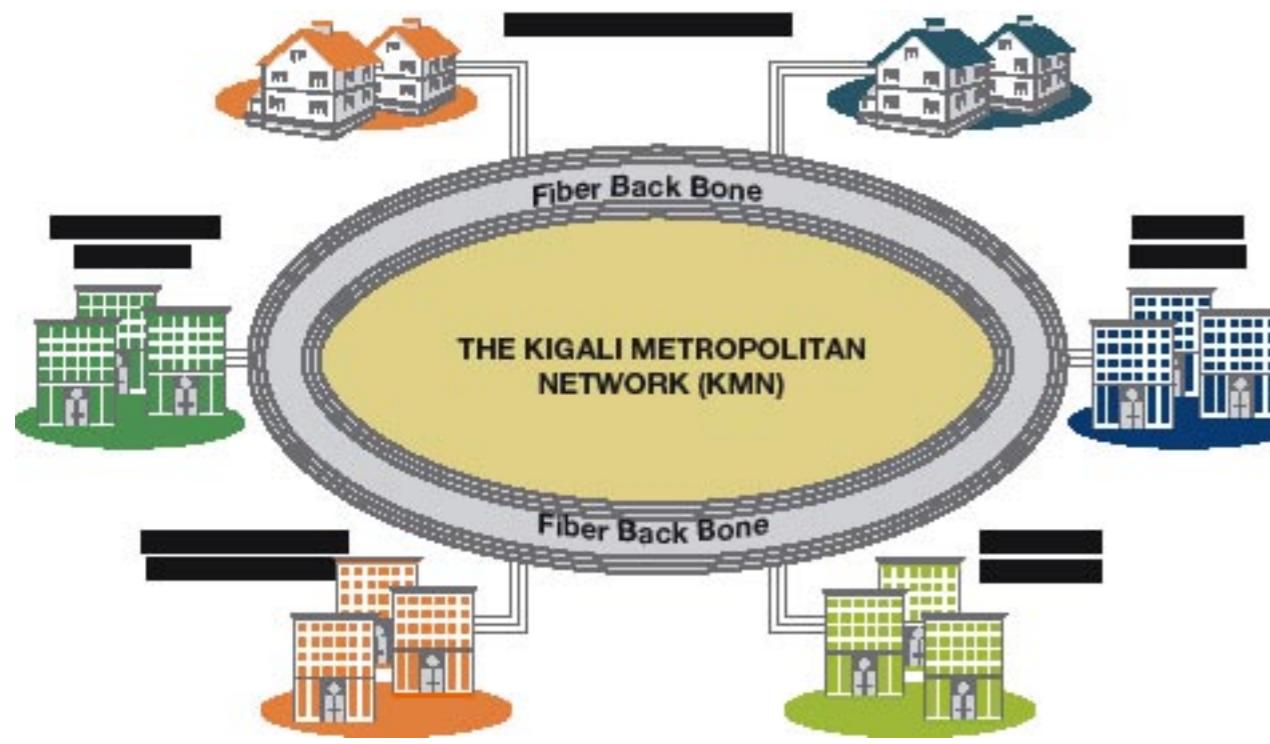


Figure 6: GovNet Configuration 2 – Kacyiru-MINIJUST Fibre Backbone and WirelessWAN

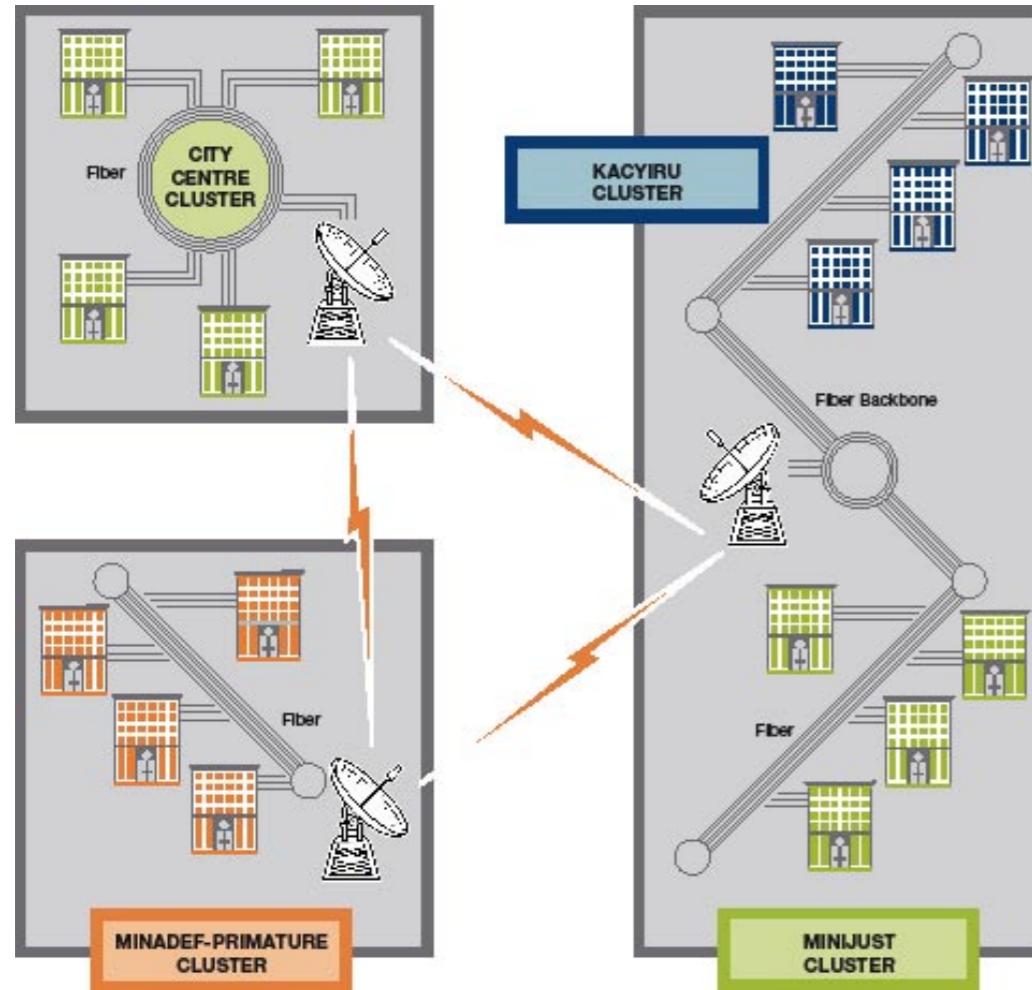


Figure 7: GovNet Configuration 3 – Kacyiru-MINIJUST-MIN-PRI Fiber Backbone and WirelessWAN

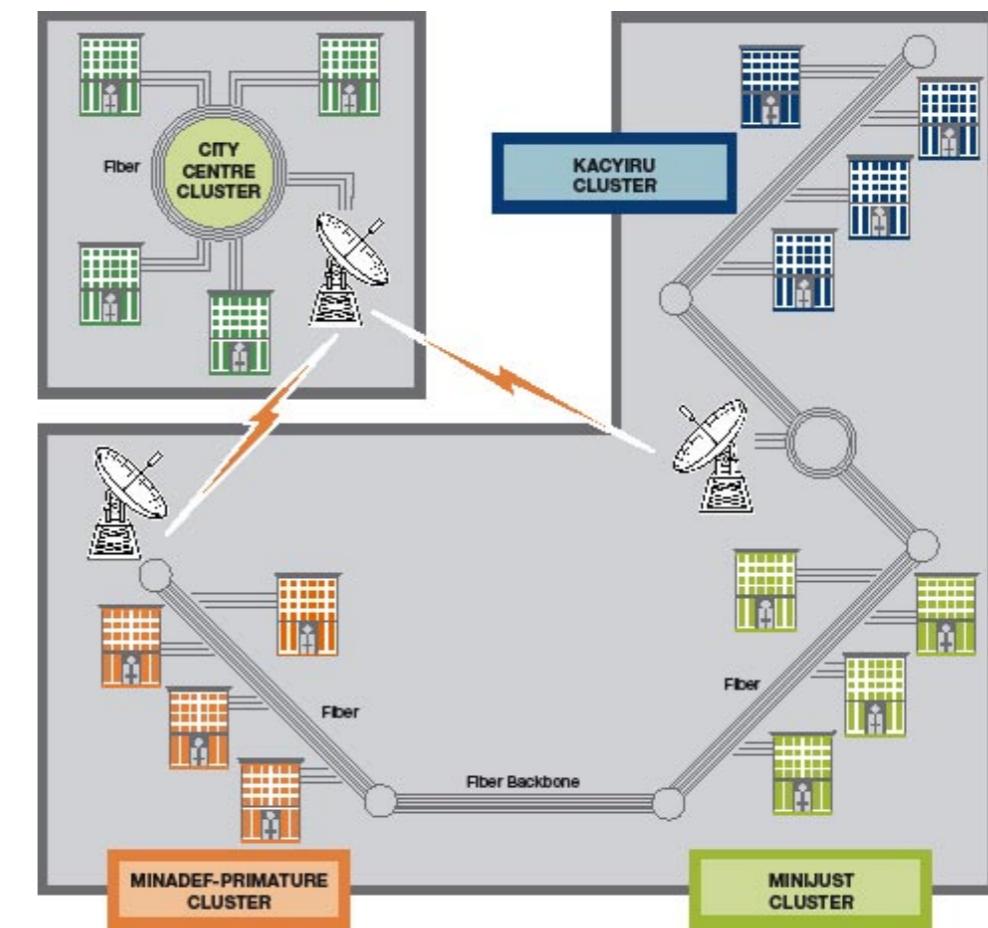
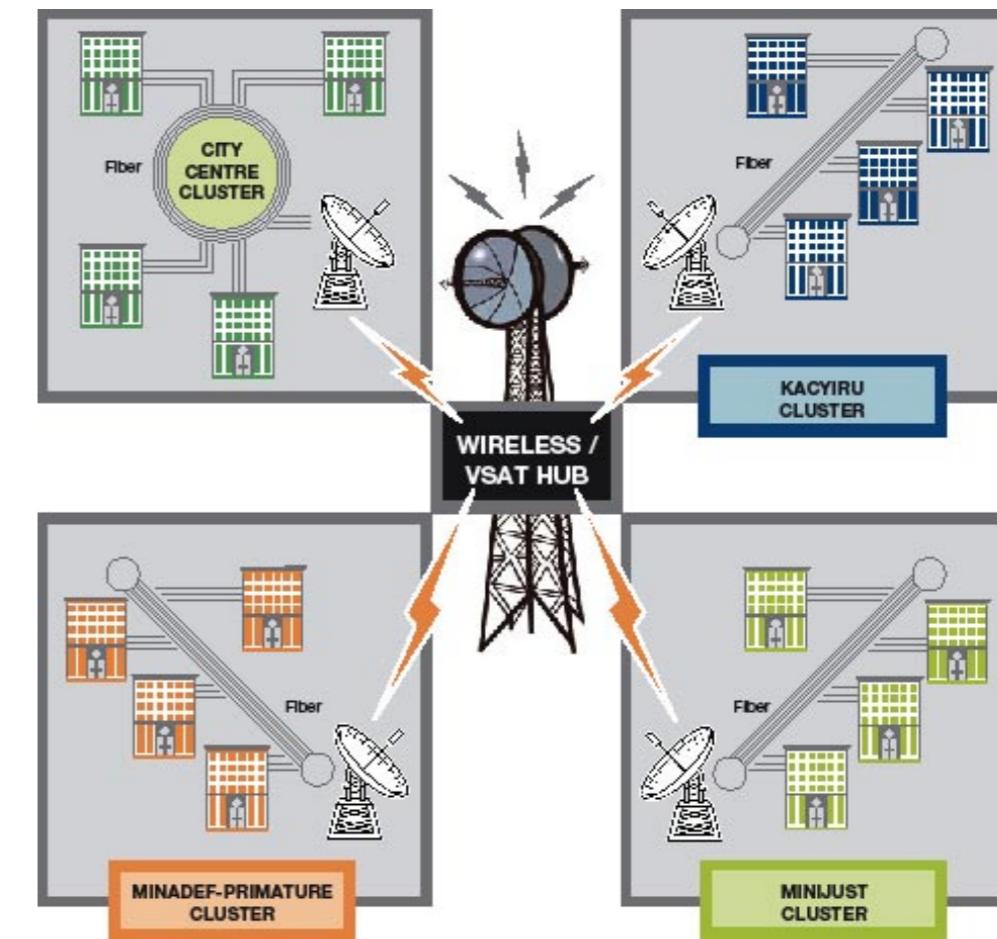


Figure 8: GovNet Configuration 4 – Cluster Fibre Backbones and WirelessWAN



### The Back Office Systems (BOSSs)

The back office systems (BOSSs) are organization-specific (single platform) or shared platform (multiple-organization-based) application systems. They include administrative and transaction processing systems as well as decision support systems and other information systems. As e-Government application systems, the BOSSs support the administrative functions and operations of the Government Ministries and PSOs, and in some cases serve as information and service provision systems to support decision-making and service delivery within these Ministries and PSOs. Some candidate BOSSs are illustrated below.

It is expected that the majority of the back office systems will be used to generate outputs that feed into specific public-interface services applications (PISAs) to facilitate the provision of specific G2C, G2B or G2G services to targeted groups. For example, BOSSs such as the National Civic Education System, Communal Information Systems and the Local Government Administration System could be seen as candidate BOSSs that could be developed to generate information to support services such as Local Community Information Services as a type of a PISA.

On the whole, a number of other possible types of relationships can be established linking specific BOSSs

**Figure 9: The Back Office Systems (BOSSs)**



to PISAs with the BOSSs providing inputs in terms of information to relevant PISAs, which will then interface with the public for the delivery of specific G2C and G2B and, in some cases, G2G services. The various possible permutations are illustrated below as: one-to-one, many-to-one, one-to-many and many-to-many types of relationships.

### Public-Interface Services Applications (PISAs)

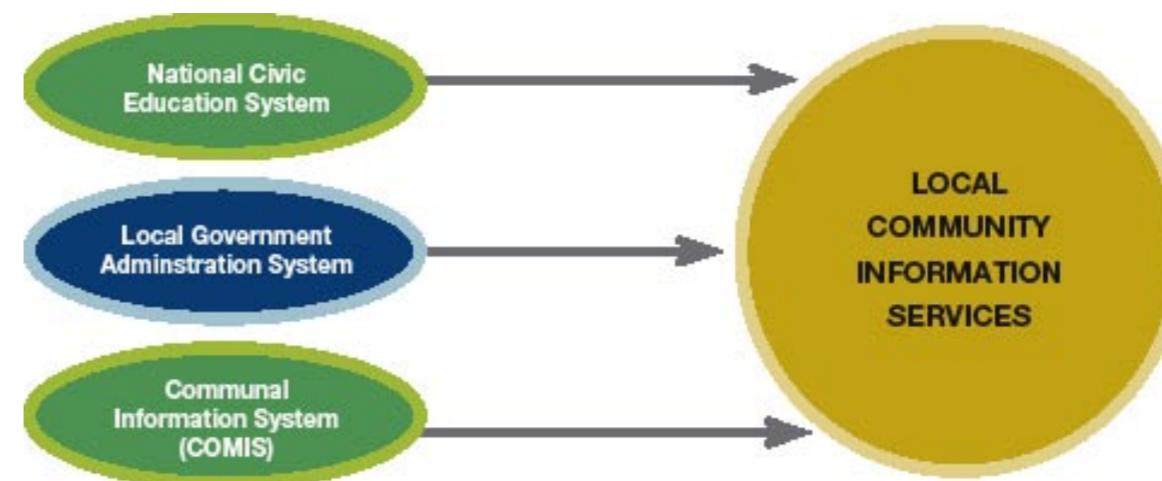
The public-interface services applications (PISAs) are the main e-Government applications for the provision of e-Government related services and information to the public. Two broad types of PISAs can be identified: (i) the “life-event” services and information systems targeting the provision of e-Government information services related to life-events like birth, childhood, schooling, marriage, employment, housing, voting, death, etc; and (ii) community, and public-interest services and information systems, examples of which include local community services, tax information services, judicial information services, and businesses opportunity information services, among others. A number of candidate PISAs are illustrated below.

It is envisaged that as part of the e-Government implementation strategy, a core activity of the e-Government system roll-out process will involve the development and implementation of the relevant PISAs to serve as the main engine for the delivery of G2C, G2B and G2G e-Government services to the public. A number of the PISAs will be interfaced to relevant BOSSs, which will provide inputs. (The development and roll-out of the PISAs will depend largely on the implementation of a critical mass of the BOSSs by the designated Ministries and PSOs)

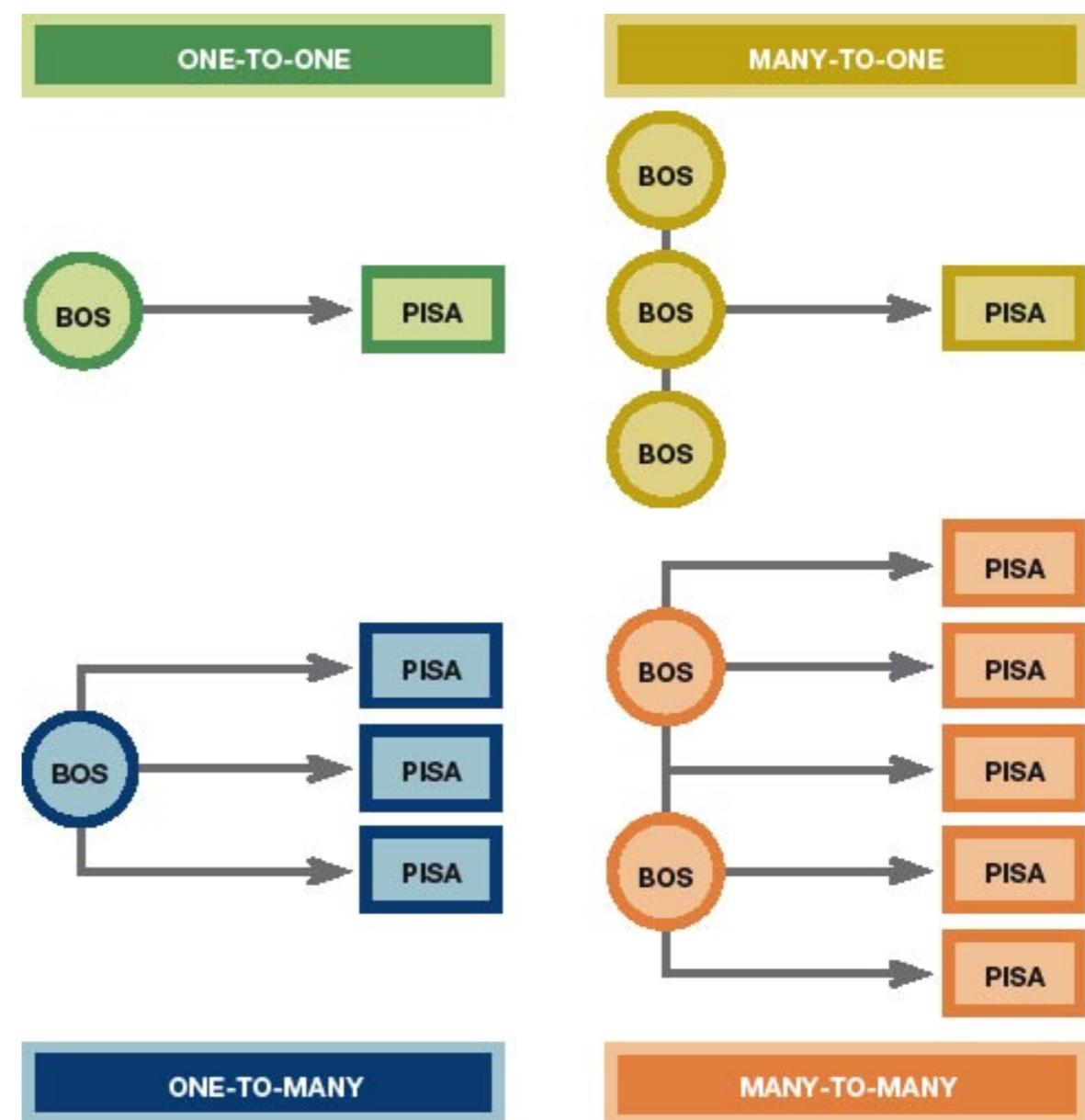
Some of the services provided by the PISAs are single-agency in nature, meaning the relevant service is being provided by an agency like a Government Ministry or PSO; for example library information services is a PISA provided by the National Library Board.

The majority of the services provided by the PISAs are shared inter-agency e-Government services, in other words, these services are traceable to two or more agencies acting as the providers of various information (some generated from their respective BOSSs) on which the relevant service is based. For example, the provision of Business Services as a PISA could have been based on a cross-agency and shared platform information originating from relevant BOSSs of agencies such as

**Figure 10: Local Community Information Services as a Type of PISA**



**Figure 11: Linking BOSSs to PISAs**



Ministry of Finance and Economic Planning; RIEPA, Ministry of Industry and Commerce, the Privatization Agency and possibly from the Private Sector Federation.

However, irrespective of whether the sources of the information underlying the e-Government services provided to the public via the PISAs are based either on single-agency or multi-agency platform, the design of the PISAs will be such that, the services they provide will be transparent to the users. In other words, the PISAs will be service-provision orientated, and as such, the services will appear to the users as agency neutral.

The premise is that: citizens and businesses as users of the services do not need to know (at least within the context of on-line services) which organization or agency to approach for a specific service, and therefore do not need to know which agency is behind the provision of the services. In fact, the public in most cases do not know which Government agency to approach for a given service.

In accessing the on-line services provided by the PISAs, the public (as users) is interested in the services being provided, rather than the source or provider of these services. For example, a couple wanting to register their marriage do not need to know that this is normally handled by a Ministry of Justice Department; parents wanting to register the birth of their child do not need to know that this is done by the Ministry of Local Government; a graduate or a school-leaver seeking employment does not need to know that the Ministry of Public Service and Labor is the source of information on vacancies in the Public Service; and a potential tourist does not need to know that the tourism information

services he/she is being provided over the web is from either RIEPA, the Tourist Board, or the National Hotel Federation, or a combination of these agencies.

The overall objective to develop an agency-independent, citizen-centered and services-oriented G2C, G2B and G2G e-Government system for Rwanda is met by the architecture and the service-provision features underlying the PISAs. The profiles of various PISAs are detailed in Annex 1 below.

#### The Front-end Systems (FES)

The front-end system (FES) collectively provides the necessary tools, processes and systems for facilitating public access to e-Government services provided by the PISAs. The FES serves as the gateway to the entire e-Government system for G2C, G2B and G2G services. The FES incorporates a number of gateway services tools and resources for initiating, maintaining and terminating user-PISA dialog sessions; authentication and authorization of access; processing registration and enrollment of users and for providing access security services.

#### Public Access Channels (PACs)

The public access channels are to provide access to the e-Government services provided by the PISAs via a suitable front-end system (FES). The public (citizens and businesses) will link into the e-Government services provided by the PISAs via appropriate off-line or on-line public access channels (PACs). While the PAC provides the physical access to services of the PISAs via the FES, the FES will provide the functionality and the processes for initiating, maintaining and terminating a particular user access dialog session with a relevant PISA.

Figure 12: Public Interface Services Applications (PISAs)

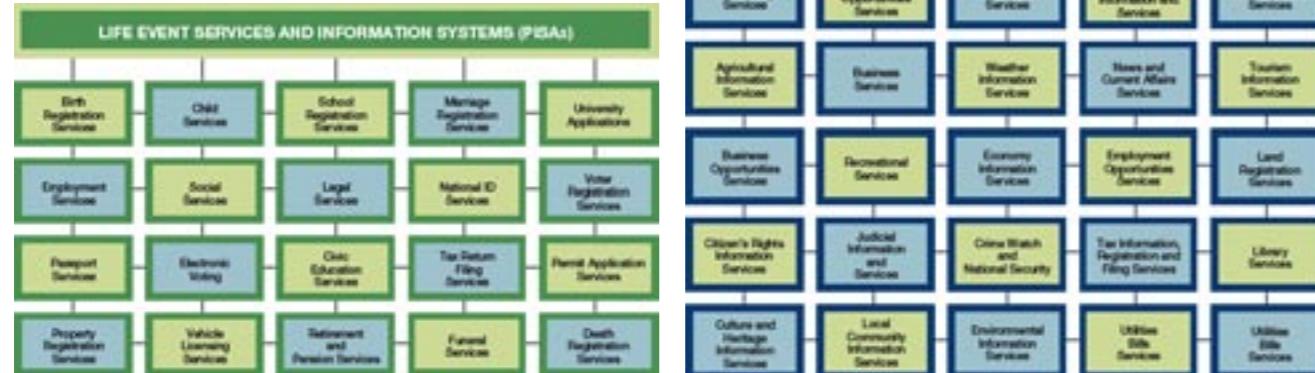
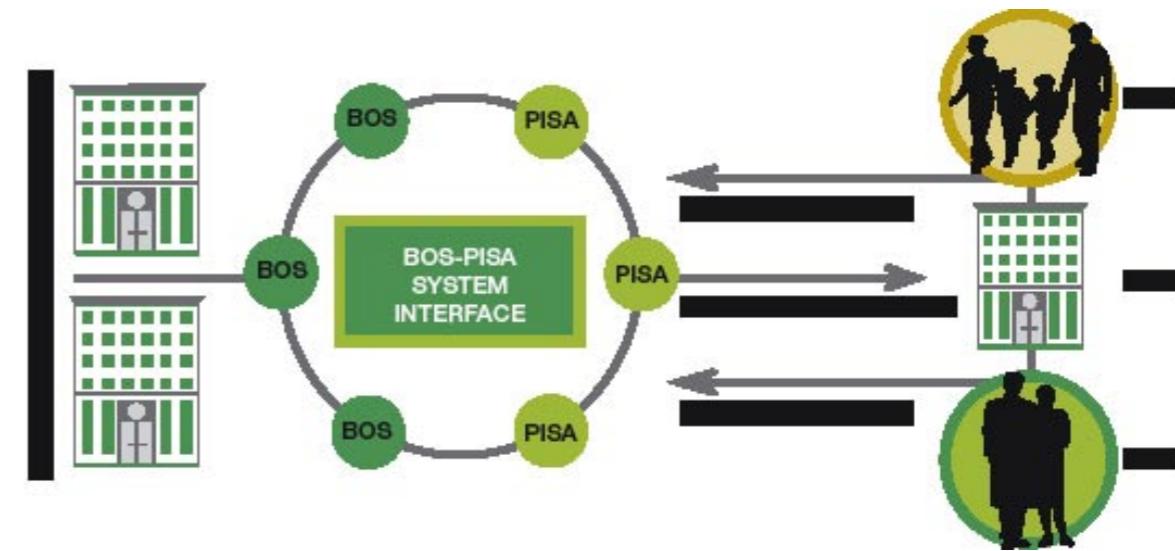


Figure 13: G2C, G2B and G2G



#### System Management Architecture and Platform (SMAP)

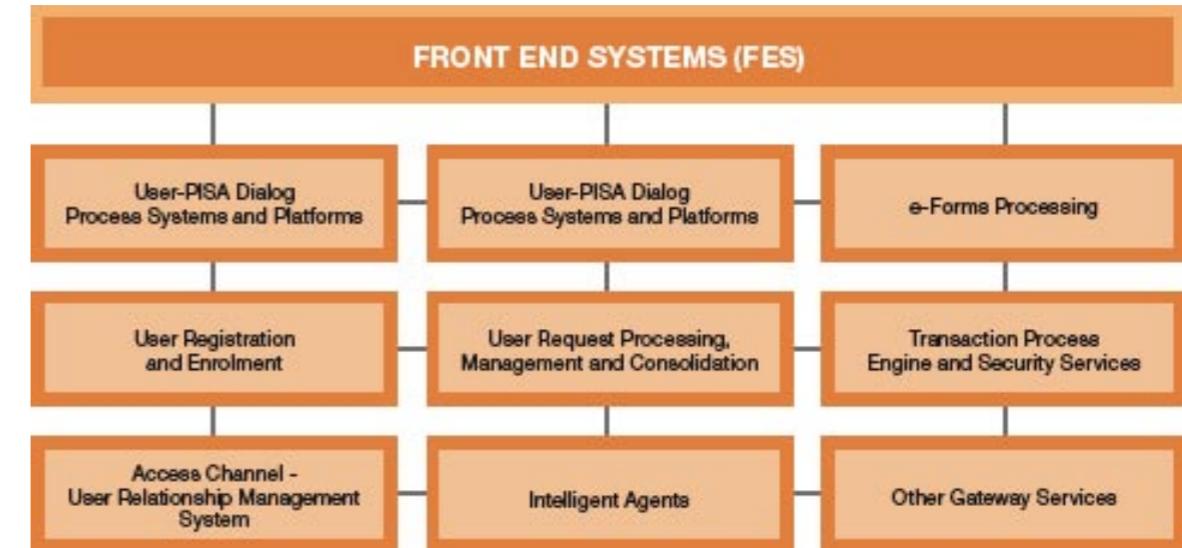
The system management architecture and platform (SMAP) as a key component of a fully functional e-Government system serves as a central source for tools, processes, platforms and procedures for the management of resources, access, and content within the e-Government system. The SMAP, apart from specifying architectures and platforms for content management, share document management, system access security, authentication and authorization management, also defines across-agency management structures for supporting the implementation of the e-Government system functionalities as well as defining and specifying architectures, platforms and common standards and specifications for e-Government implementation

system management and applications systems development and roll-out.

#### Supporting Systems Platforms and Processes (SSPPs)

The supporting systems, platforms and processes (SSPPs) sub-component consist of tools, systems processes, procedures, platforms and standards for supporting and enhancing the functionality of other key system component like: the BOSs, PISAs, SMAP and the FES. Some of these tools include: the Shared System and Applications Integration Platforms & Processes; Directory System Services and Management Platforms and Processes; Common/Shared Database Platforms and Management Systems and Processes; User-Interface and System Gateway Services Support-

Figure 14: The Front-end Systems



ing Process and Platforms; and Legacy Systems Migration and Integration Processes and Platforms.

#### The Data Center

The Data Center serves as the central repository of data and applications within the system. It host among others, database servers, web servers, data warehouses, and application servers. The Data Center is linked to all other constituent subsystems within the e-Government system. (It is envisaged that basic elements of the Data Center will be implemented as part of the *e-Government Sub-plan* of the NICI-2010 Plan with the major part to be rolled out in subsequent plans)

The ultimate goal is to, within 15 to 20 years, develop and roll out a fully functional and mature e-Government system for Rwanda, with the characteristics and features of the e-Government functional model described above. The proposed e-Government implementation strategy is designed to achieve this objective through the implementation of specific activities, and initiatives developed in part to address a number of the key barriers and challenges to the development of Rwanda's e-Government program. The identification of these e-Government development challenges provides a basis for crystallizing a number of the key actions of the implementation strategy required for guiding the development and the implementation of relevant identified programs and initiatives to facilitate e-Government system roll-out in Rwanda.

### 3.0 AN E-GOVERNMENT IMPLEMENTATION STRATEGY FOR RWANDA

Based on the details of the e-Government functional model proposed for Rwanda (developed and described in Section 2.0), this section presents details of the proposed Implementation Strategy to guide the process of rolling out Rwanda's e-Government program. First, a number of "current situation" factors that need to be taken into account in developing this strategy are reviewed.

#### 3.1 Taking into Account the "Current Situation" Realities and Factors

Rwanda as an under-developed country like most African countries is at the early stages of the deployment of ICTs to facilitate her socio-economic development process including using these technologies to support service delivery and administrative processes within its civil and public service as part of a e-Government system

roll-out program. Unlike in the case of the developed countries whose systems (Government administrative systems, etc) are in an advanced stage of development and hence can be described as "e-Government system deployment and exploitation ready," Rwanda currently faces a number of e-Government implementation barriers which need to be taken into account in mapping out the nation's e-Government implementation strategy.

In other words, given what are described below as Rwanda's "current situation" factors, it is unrealistic to suggest for Rwanda a classical "big-bang" e-Government roll-out strategy similar to that being followed by the more advanced and "e-Government-ready" nations. Instead, bearing in mind the ultimate goal is to develop for Rwanda a fully functional e-Government system depicting the key features described in Section 2.0, a staggered evolutionary e-Government system development-implementation strategy is proposed, which takes into account the following "current situation" factors:

1.1.1 Rwanda is yet to set up all the key REGGI-enabler institutions envisaged in the NICI-2005 Plan. These includes: NITC, ITSDs, PECC, etc. The setting up and the strengthening of the capacity of these institutions will be crucial for e-Government take-off in Rwanda

1.1.2 The implementation of e-Government in Rwanda will not be possible without institutional reforms and the re-engineering of organizational processes, structures and procedures within the Government Ministries and Public Sector Organization

1.1.3 Rwanda is yet to enact laws and legislative provisions and instruments necessary for providing the requisite legal and legislative enabling environment to facilitate the take-off and the roll-out of the e-Government Program.

1.1.4 Rwanda lacks the necessary technical and professional level human resources to support the nation's intended e-Government program. The development and the deployment of a critical mass of skills and personnel in key technical and professional areas will be necessary for the success of the e-Government program

1.1.5 Rwanda currently does not have an extensive national communications infrastructure to support the roll-out of a comprehensive e-Government program. The proposed GovNet to interconnect all Government Ministries and Agencies, a necessary infrastructure for the deployment of e-Government systems, is not

Figure 15: System Management Architecture and Platform (SMAP)

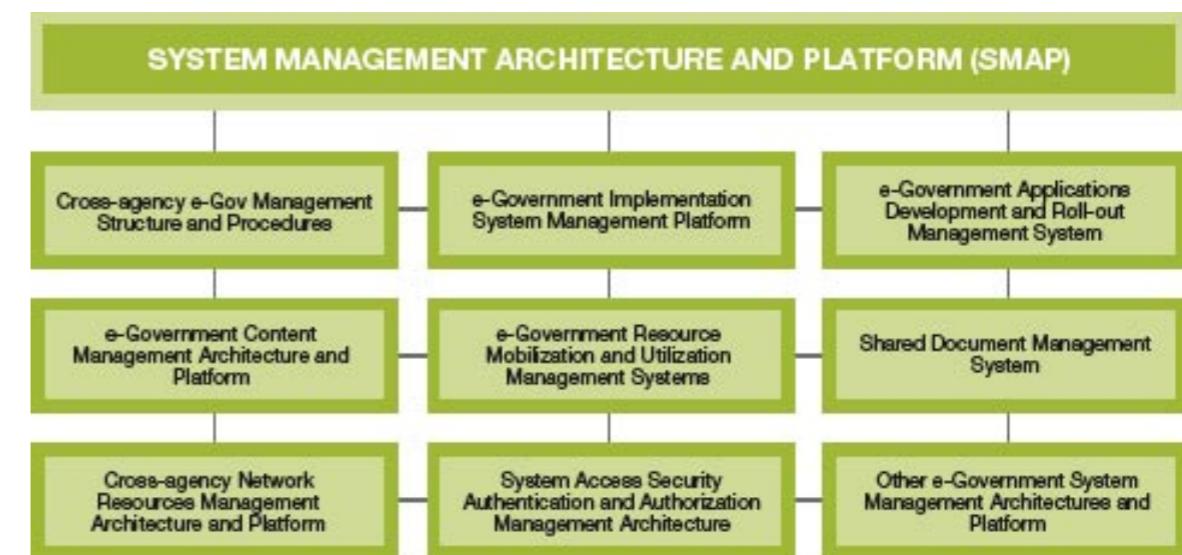


Figure 16: Supporting Systems Platforms and Processes (SSPPs)

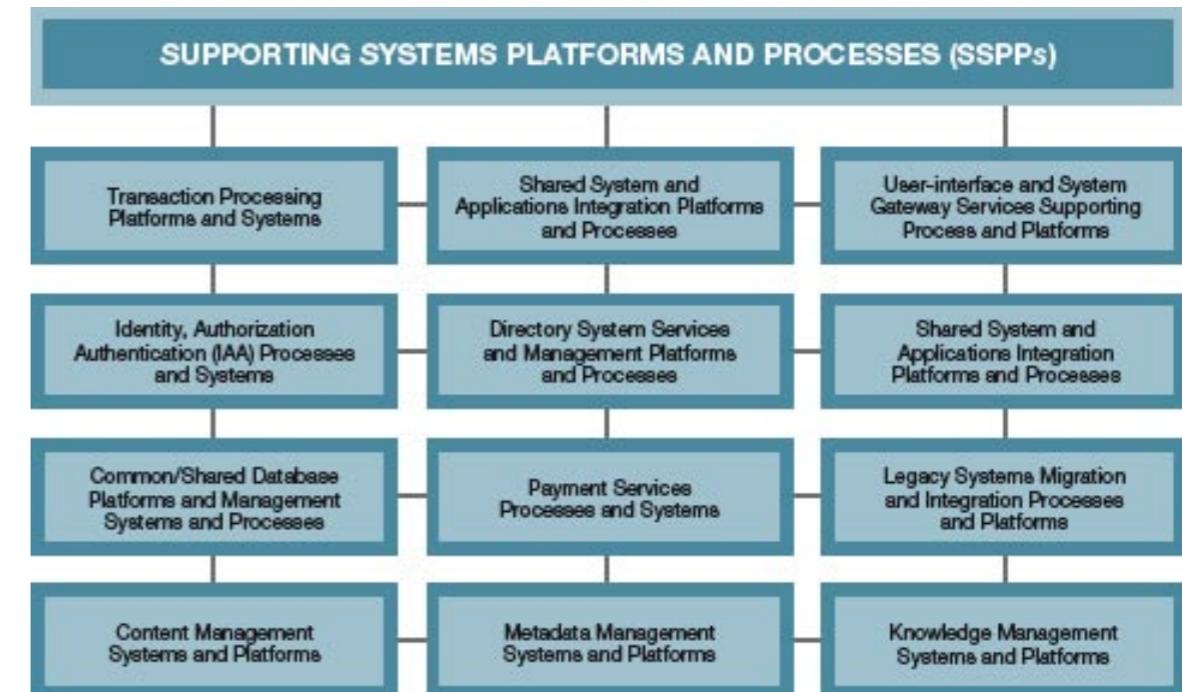
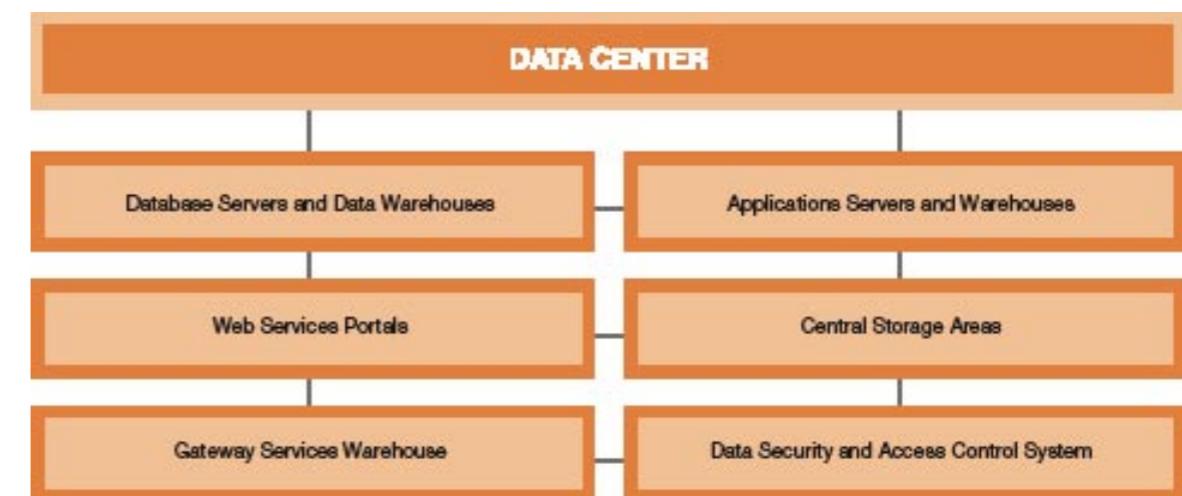


Figure 17: The Data Center



yet in place. Not all the Government Ministries and Public Sector Organizations have implemented their organizational or corporate networks – a key requirement for implementing e-Government systems. The Internet infrastructure within the country is still very limited and the vast majority of citizens currently does not have on-line access, hence could not access on-line e-Government services if they are made available. Public access points like Telecenters, Public Information Kiosk (PIKs) and other such public access channels are not yet widespread within the country.

1.1.6 The majority of the Government Ministries and PSOs have not yet developed and implemented their designated Back Office Systems (BOSs) as per the NICI-2005 Plan. As such, the majority of these agencies do not have in place relevant computer-based applications, information and database systems (other than standard off-the-shelf applications) to support their administrative and service delivery functions and operations. Since the majority of the BOSs (identified in Section 2.0) required for supporting e-Government service delivery via the PISAs are yet to be developed, by most of the Ministries and PSOs, it will not be possible at the early stages of the implementation of the e-Government Program to deliver a number of the public-interface services described in Section 2.0. In other words, an obvious implementation strategy will be start with the development and implementation of the relevant BOSs and once a critical mass of these systems has been deployed, the development and the deployment of the PISAs can follow.

1.1.7 The Government does not have the necessary financial resources to invest in the implementation of a comprehensive e-Government system at-a-go across all Government Ministries, PSOs and within the community at large. It is therefore more likely that given the financial resource constraints, the bulk of the e-Government Program is likely to be implemented on a piece-meal basis with each Agency implementing its components of the program as of when funds become available from Government or Donor sources. It is anticipated that a substantial part of the implementation of the e-Government Program is likely to depend on the availability of donor funding and as such this will dictate the pace and areas of focus of the implementation process.

### **Requirement for Institutional Reforms and the Re-engineering of Organizational Processes and Procedures**

The measure of the success of an e-Government system defined in terms of the extent to which it brings about improvements in both the delivery of services to the public and in Government administration and efficiency depends very much on improvements in organizational activities, operations, procedures and process of Government Agencies (as service producers and providers). It is acknowledged that within the context of Rwanda, these improvements in organizational systems will not be possible without necessary institutional reforms.

A key prerequisite for the successful implementation of the e-Government Program is the need to embark on an institutional reform initiative aimed at re-engineering organizational processes, procedures and structures of civil and public sector institutions and establishments.

The premise is that the current operational environment and organizational structures and processes in most of the Ministries and PSOs are not conducive to the implementation of e-Government systems and as such, will need to be overhauled as part of the process of making them “e-Government system implementation ready”.

### **1.2 Defining e-Government Roll-out Principles and Corresponding Implementation Strategy Core Activities**

Based on the observations made in Section 3.1 in relation to the “current situation” factors and how some of these could pose as a barrier for the successful take-off and the implementation of Rwandan’s e-Government program, defined below are a number of *guiding principles* to guide the roll-out of the e-Government Program, taking into account the observations made above. For each of the roll-out principles, a core activity which forms the basis for the development of the proposed e-Government implementation strategy and action plan is identified.

#### **3.2.1 Roll-Out Principle 1:**

Based on the current situation observation 3.1.1, it is obvious that a key pre-condition for the implementation of the e-Government Program is the need to set up and strengthen the capacity of the identified REGGI-enabler institutions as per the NICI-2005 Plan. Of these institutions, RITA has been set up,

but substantial resources are needed to strengthen its capacity to a level that will enable it to coordinate the implementation of the e-Government program. Other required institutions that need to be set up and strengthened as a pre-condition for rolling out the e-Government initiatives are the NITC, the ITSDs and the PECCs. Also recommended is the need to set up an e-Government Implementation Oversight Committee under the auspices of RITA to oversee the roll-out of the e-Government Action Plan. The membership of this Committee is to be made up of the Heads of the ITSDs representatives of PECCs and RITA with the RITA Executive Director acting as its Coordinator

Based on these observations, a core implementation-strategy activity can be defined as follows:

*CA-1: REGGI Enabler Institutional Set-ups: (NITC, RITA, RITA-Board, PECCs, ITSDs, and Others)*

#### **3.2.1 Roll-Out Principle 2:**

Based on observation 3.1.2, a key precondition for the development, deployment and roll-out of e-Government system in Rwanda is the need to carry out necessary institutional and organizational reforms within Government Ministries and the PSOs. As part of this reform process, there is the need for the re-engineering of the organizational operations, processes and procedures of relevant agencies to facilitate and improve on their administrative efficiency and service delivery as a step towards making them “e-Government service delivery ready”.

Based on this roll-out principle, the following core implementation-strategy activity can be identified:

*CA-2: REGGI Pre-Condition Institutional Reform and Re-engineering (Instituting and implementing necessary changes in relevant public-sector organizational and institutional structures, processes, and procedures conducive for the effective implementation the various e-Government programs and initiatives)*

#### **3.2.3 Roll-Out Principle 3:**

Based on observation 3.1.3, a crucial roll-out principle is the need to enact laws and legislative provisions necessary for providing the requisite legal and legislative enabling environment for the e-Government Program to be a success. Some of these laws may be a pre-condition for the launch of the e-Government program, while others may be required to facilitate the e-Government

roll-out and implementation process. A relevant core activity can be identified as follows:

*CA-3: Enactment of REGGI-Enabler Legal and Legislative Provisions for e-Government take-off and Roll-out (Legislations for setting-up REGGI-Enabler Institutions, Initiating the Process of developing and enacting relevant REGGI-Enabler Laws and Legislative Provisions)*

#### **3.2.4 Roll-Out Principle 4:**

Referring to “current situation” observation 3.1.4, it is clear that a major barrier to the implementation of e-Government in Rwanda to support Government administration and service delivery is the serious shortfall in human resources in critical skill areas necessary for supporting the development, deployment and the implementation of the e-Government system. A key roll-out principle therefore relates to the need to invest in the development of a critical mass of human resources in key technical, managerial and professional areas to support the e-Government program. In situations where there is major shortfall in critical skills than what is required for e-Government take-off, it will be necessary to regard the development of these skills as a pre-condition for the take-off of the e-Government program.

Based on this roll-out principle, the following core implementation-strategy activity can be identified:

*CA-4: Developing the Requisite Human Resources to Support the Implementation of e-Government (Key Technical, Managerial, ICT-related and Professional Skilled Manpower, Personnel, Expertise and Knowledge Workers necessary for supporting the deployment and roll-out of e-Government programs and initiatives within the relevant civil and public service implementation agencies)*

#### **3.2.5 Roll-Out Principle 5:**

Referring to the observations made in 3.1.5 in relation to the weak and narrow communications infrastructure base of the country, it is clear that the development of the necessary physical communications infrastructure and public access channels will be crucial not only for the deployment and roll-out of e-Government initiatives and programs within the Government Ministries and PSOs but also for the penetration and diffusion of e-Government services in the public at large. The implementation of organizational corporate networks is a pre-condition for the take-off of the e-Government

program. In addition, the rapid implementation of GovNet to inter-connect all Government Ministries and PSOs, and to provide a common gateway facility to the Internet will be necessary to facilitate the delivery of on-line e-Government services via web portals and e-mail public access channels to the public.

Based on this roll-out principle, the following core implementation-strategy activities can be identified:

*CA-5.1: Development, Deployment and Roll-out of Requisite Delivery Physical Communication Infrastructure, Systems and Platforms (Organizational/Corporate Computer Networks, Government-wide Network [GovNet]; and other Shared Delivery Infrastructure/Platform)*

*CA-5.2: Development, Deployment and Roll-out of Online Public Access Channels, Systems and Infrastructure (Developing and Implementing various technologies, systems and infrastructures to facilitate public access to on-line e-Government and community-based information services delivered via PISAs or other systems)*

### 3.2.6 Roll-Out Principle 6:

Observation 3.1.6 establishes a need to develop the designated BOSSs as a basis for rolling out e-Government applications by all Government Ministries and PSOs. Currently the majority of the Ministries and PSOs are scarcely computerized in terms of developing and implementing specific computer-based administrative and transaction-based applications and systems. The majority of these agencies have not yet implemented the relevant back office information systems (BOSSs) that could serve as a basis for the delivery of information services through relevant PISAs to the public as part of e-Government service-delivery initiative. A number of key e-Government roll-out guiding principles can be deduced:

- The need to develop and enforce a BOS Development and Implementation Technical Guideline to serve as a toolkit to guide Government Ministries and PSOs in the design, development and the implementation of their designated BOSSs to ensure across-the-board standards enforcement, application system integration and sharing across Ministries and PSOs
- The need for all Government Ministries and PSOs to develop their designated BOSSs (as per the relevant rolled-over Planned Actions) based on the BOS Development and Implementation Technical Guideline

- The need to subsequently develop the PISAs linked to the relevant BOSSs based on a PISA Development and Implementation Technical Guideline
- The need to develop other supporting applications systems necessary for support the information and service provision functionality of the BOSSs and the PISA

Based on these roll-out principles, the following core implementation-strategy activities can be identified:

*CA-6.1: Developing and Implementing organization-specific Single Platform (organization-based) and Shared Platform (multiple organization-based) Back Office Application Systems (including relevant computer-based applications, information and database systems to support administrative and service delivery activities of each Ministries and PSOs; and shared inter-agency e-Government application systems and platforms)*

*CA-6.2: Developing and Implementing relevant PISAs (including the “Life-Event” Services and Information Systems and the “Community and Public Interest “ Services and Information Systems) as the e-Government system evolves and a critical mass of relevant BOSSs have been developed and deployed*

*CA-6.3: Developing and Implementing other relevant supporting Application Systems (including FES, SMAP, SSPPs, etc)*

### 3.2.7 Roll-Out Principle 7:

The implications of the “current situation” observation 3.1.7 is that, the Government cannot adopt a “big bang” approach in rolling out its e-Government Program since it does not have the necessary financial resources, to “at-a-go” finance all the e-Government Program roll-out core activities especially those relating to the development and deployment of systems and resources like the corporate networks of all Ministries and PSOs, the GovNet backbone and system; the BOSSs of all Ministries and PSOs, the PISAs, as well as building and strengthening the capacities of the identified REGGI-enabler institutions once they have been set up.

Concentrating on the development and deployment of the various application systems identified in the application architecture of the proposed e-Government functional model described in Section 2.0, it is obvious that the lack of resources to develop them across the

board means that an evolutional approach rather than a “big-bang” approach will need to be implemented in rolling out Rwanda’s e-Government program. A number of key e-Government roll-out guiding principles can be deduced:

- The “big-bang” approach involving: developing an enterprise architecture and using this to drive the design, development and the roll-out of all e-Government systems encompassing all Government Ministries and PSOs is not possible within the context of Rwanda
- Specific systems will be developed at various times by each Government Ministry or PSO when resources are available, with some organizations likely to mobilize resources better than others, and hence implement their systems (e.g. BOSSs, corporate networks) earlier than others.
- The necessity for Rwanda to adopt an evolutionary rather than a revolutionary approach in rolling out its e-Government program, means that components of the e-Government system (described in Section 2.0) will be developed on a “funds-availability” piece meal basis.
- Granted the need to adopt an evolutional approach, there is a crucial need to develop and enforce common standards and guidelines to guide the development of the component systems by the designated agencies to ensure system integration and sharing across Ministries and PSOs, and the interoperability of systems developed at different stages of the life-cycle of the national e-Government program.

Based on these roll-out principles, the following core implementation-strategy activities can be identified:

*CA-7.1: Developing a Robust, Flexible and Scalable Architecture: for supporting across-the-board standards enforcement, application system integration and sharing across Ministries and PSOs, interoperability of systems and where appropriate provide a flexible common view of systems operating across a number of Ministries and PSOs. (Such an architecture could for example, propose common data and application platforms and set specific standards and guidelines for the implementation of systems like physical networks, databases, information systems etc and serve as a basis for the development and implementation of systems and solutions that meets minimum requirements and common standards to facilitate system interoperability, and where appropriate, system-level integration, and the sharing and exchange of data and applications across the systems)*

*CA-7.2: Developing, Revising, Updating and Implementing relevant Technical Standards, Guidelines, Procedures to Guide the Deployment and Roll-Out of e-Gov Programs and Initiatives*

### 3.4 Elements of the Proposed e-Government Implementation Strategy Rwanda

Summarized below are the key elements of the proposed e-Government implementation strategy, defined in terms of 17 specific actions to be taken in implementing the identified ten core activities of the strategy. These actions are grouped under five broad headings:

A: Addressing the Prerequisites for the Development and Deployment of the e-Gov System

B: Development, Deployment and Roll-out of the Physical Communications Infrastructure

C: Development of Requisite Human Resources

D: The development of the Constituent Systems of the Applications Architecture

E: Development of System Architecture & Technical Standards for Supporting e-Gov System Roll-out

<b>CORE ACTIVITIES</b>	
<b>A: Addressing the Pre-requisites for the Development and Deployment of e-Gov System</b>	
Setting-up e-Government Enabler Institutions and Support Structures	CA-1
Carrying out Institutional and Organizational Reforms and Re-Engineering of relevant Government Ministries and PSOs	CA-2
Developing and Passing Relevant e-Government Enabler Laws and Legislations	CA-3
Addressing other Institutional, Physical and Resources Barriers to the Implementation of a fully functional electronic government system for Rwanda	
<b>B: Development, Deployment and Roll-out of the Physical Communications Infrastructure</b>	
Design, Development and Roll-out of the requisite Communications Infrastructure	CA-5.1
Design and Implement Suitable Public Access Channels (PACs)	CA-5.2
<b>C: Development of Requisite Human Resources</b>	
Development of Human Resources to support the Deployment and Implementation of REGGI Programs and Initiatives	CA-4
Development of Institutional and Managerial (Admin and Systems) Structure and System to support e-Government system, roll-out, administration (managerial and system admin) and maintenance	CA-4
<b>D: The Development of the Constituent Systems of the Applications Architecture</b>	
Design, Develop and Implement relevant BOSs	CA-6.1
Design and implement Intra- and Inter-Organizational BOS Integration	CA-6.1
Design, Develop and Implement relevant Public-Interface Services Applications (PISAs)	CA-6.2
Design, Develop and Implement BOS - PISA System Integration and Interfacing	CA-6.2
Design, Develop and Implement Front-End Systems (FESs)	CA-6.3
Design, Develop & Implement System Management Architecture & Platform (SMAP)	CA-6.3
Design, Develop and Implement Supporting Systems Platforms and Processes (SSPPs)	CA-6.3
<b>E: Dev of System Architecture &amp; Technical Standards for Supporting e-Gov System Roll-out</b>	
Developing and Implementing a Robust, Flexible and Scalable Enterprise Architecture	CA-7.1
Developing & Implementing Technical Standards, Specifications, Guidelines, Procedures to Guide the Development, Roll	CA-7.2

Actions grouped under A need to be implemented to provide the enabling environment needed to launch the Government's e-Government program. Those actions grouped under B, C and D relates more to the aspects of the implementation strategy targeted at the development and deployment of the relevant constituent systems of the fully operational e-Government system (described in Section 2.0). The implementation of these actions will deliver the required products of the Rwandan e-Government program. Actions identified under E relates to those implementation-strategy core activities aimed at developing the necessary architec-

tures and technical guidelines and standards to support the roll-out of the e-Government Program.

Identifying and linking specific actions to the core activities provides the details of the proposed strategy for rolling out Rwanda's e-Government Program in terms of the actions that need to be taken to implement each of the implementation strategy core activities.

The implementation of the identified core activities in terms of the listed e-Government system development, deployment and supporting actions constitutes the key

elements of the proposed e-Government implementation strategy for Rwanda

### 3.4 The Staggered Evolutional e-Government Implementation Strategy for Rwanda

Based on the details of the proposed e-Government implementation strategy presented above, and taking into account the underlying observations of the guiding principle 7 in relation to the need to adopt an evolutional approach to the roll-out of the e-Government Program in Rwanda, the diagram below summarizes the proposed staggered evolutional e-Government implementation strategy.

The core implementation strategy activities to be implemented at each phase is identified, clearing showing those activities that span a number of phases and for that matter a number of NICI-Plans. The implementation strategy do in effect provide a suitable framework for identifying and developing e-Government programs and initiatives during each NICI phase for developing the corresponding *e-Government Sub-plan* of the main

NICI Plan to serve as an e-Government Action Plan for rolling out relevant initiatives and programs during each phase.

Given that each of core activities of the strategy are tied to specific sub-actions aimed at specific deliverables (or end-products) of a fully functional e-Government system, it is envisaged that the implementation of the proposed staggered evolutional strategy will ensure the evolutional development of the e-Government system, while effectively addressing the underlying issues raised under each of the roll-out guiding principles.

### 3.5 Scheduling the Implementation of the e-Government Plan Activities

The details of the scheduling of the core activities of the e-Government action plan based on the implementation strategy are illustrated in the diagram below. These activities are scheduled for implementation over the four NICI plans with each plan detailing initiatives to be implemented as part of its e-Government Program. Except in a few cases, the implementation of each of the core activities spans two or more NICIs.

Figure 18 The Staggered Evolutional Implementation Strategy

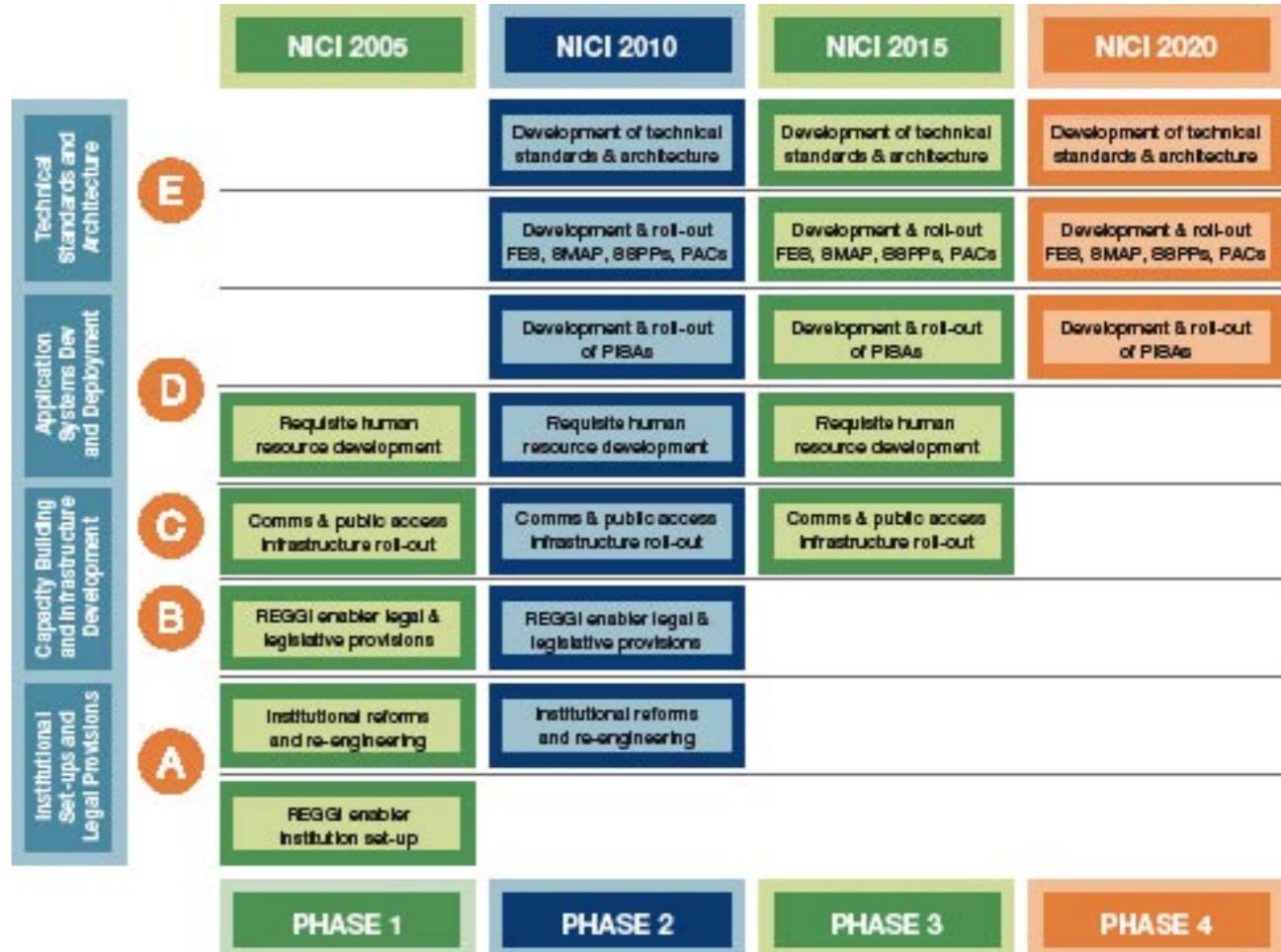
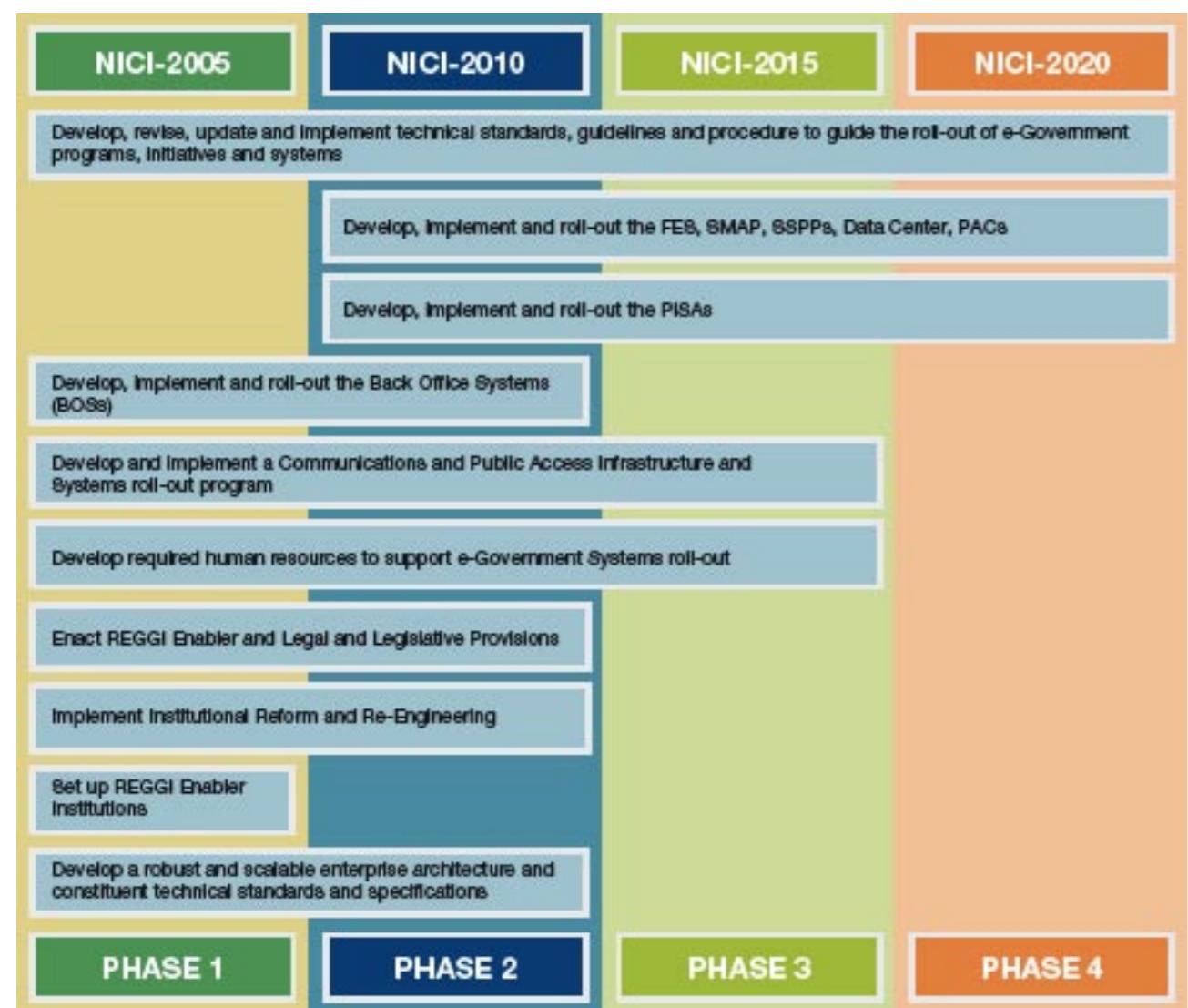


Figure 19: Scheduling the Implementation of Plan Activities



The e-Government Sub-Plan of the NICI-2010 Plan mainly relates to implementing the e-Government programs and initiatives within the context of the NICI-2010 Plan. It is anticipated that for the designated core activities that goes beyond the time-span of NICI-2010 Plan as shown above, the corresponding follow-up e-Government programs and initiatives will be developed and implemented within the framework of the relevant subsequent NICI Plans.

For example, it is envisaged that the e-Government Action Plan corresponding to the NICI-2010 and NICI-2015 plans will have various programs and initiatives targeted at the development of the requisite human resources to support the roll-out of e-Government programs over and above those needed for supporting

other initiatives of these NICIs. Similar deductions can be made for other core activities as illustrated above. It is envisaged that the development of the PISAs, SMAPs, PACs, and SSPPs will not start until NICI-2015, to allow time for the development and roll-out of a critical mass of BOSs; a process that is in itself behind schedule. It is also expected that the roll-out of the necessary communications infrastructure that has already began as part of NICI-2005 Plan will need to continue up to NICI-2015, before the required critical mass and national coverage of these infrastructures can be achieved.

The development revision, updating and implementation of technical standards and guidelines is expected to span all four NICI Plans.

### 3.6 The Envisaged Outcomes of the Implementation of the Proposed e-Government Implementation Strategy and the Action Plan

It is anticipated that Rwanda basing the development and roll-out of its e-Government Program on the implementation strategy developed and presented in this report, will be able to within the 20 years time-span of the NICI Planning and implementation process develop its e-Government system along the system evolutional path illustrated in the diagram below.

It is envisaged that the Rwandan e-Government system will move from an infant (rudimentary) system in Phase 1 (by close of NICI-2005); to a system expansion, broadening and spread stage in Phase 2; become a maturing system in Phase 3; and finally evolve into a mature and fully operational e-Government system by Phase 4, at the completion of the implementation of NICI-2020.

Parallel to this system development path, it is envisaged that the development and provision of Government on-line services based on the PISAs will also go through an evolutional process (depicted below); starting from very limited on-line presence and hardly any on-line services provision (as the case is today) to a stage where

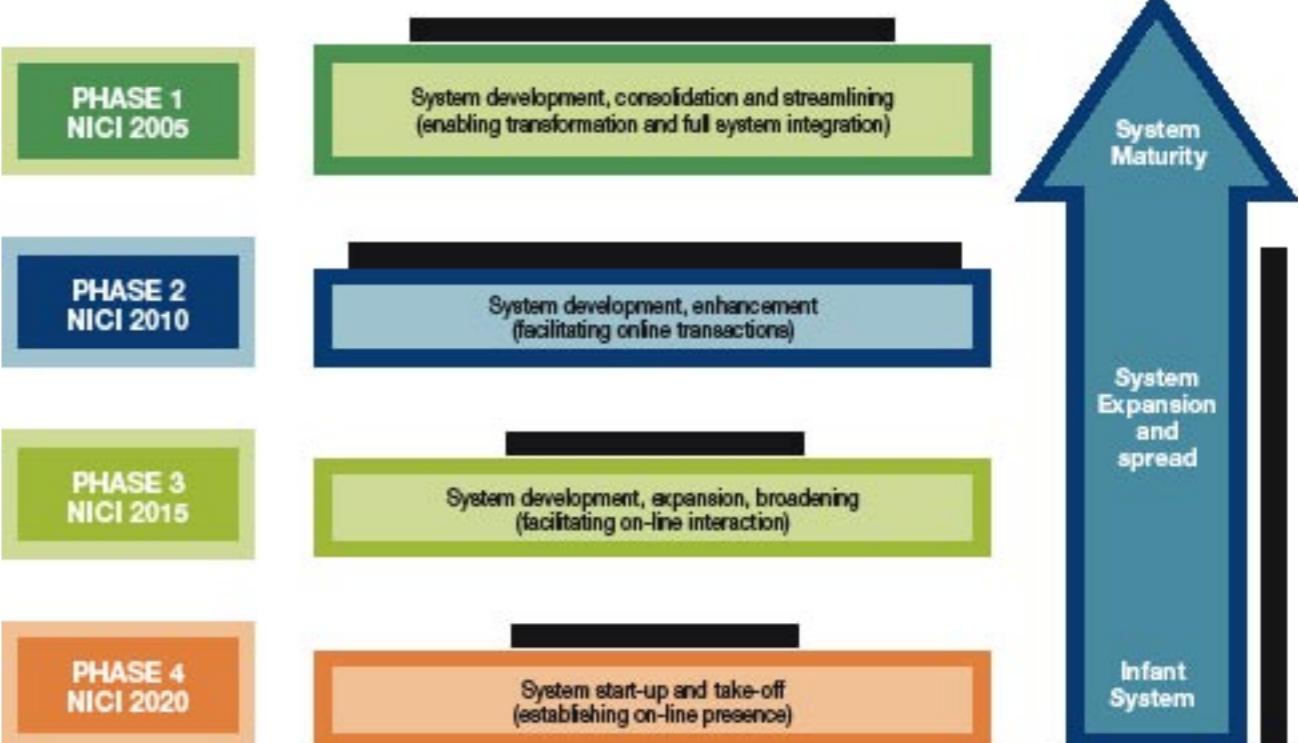
Government agencies improve their on-line presence and provide some on-line services by Phase 2 (at the close of the implementation of NICI-2010).

Following the same evolutional path is anticipated that by the close of the implementation of the e-Government Program component of the NICI-2015 Plan, Government on-line services will move to the stage of providing on-line information services and offer users (citizens and business) some interactive access to these services.

By Phase 4 as the entire e-Government system matures and becomes fully operational systems (exhibiting the features described in Section 2.0), it is anticipated that on-line services will be more interactive and users will be able to avail of some transactional services making it possible for them to pay for some of them to pay for these services.

The natural evolution of the system from them on will be improvements in transactional services and a move towards seamless integration of services across agencies so that it will be possible for users to be able to carry out multiple transactions during a single instance of a service irrespective of the number and disparity of the service provision agencies concern.

Figure 20: The Envisaged Outcomes



### The Envisaged End-Product Characteristics and Supporting Features

It is envisaged that the implementation of the proposed Evolutional e-Government Implementation Strategy, the Action Plan (within the context of the implementation of NICI-2005 Plan) and the proposed framework for developing and implementing subsequent e-Government Action Plans will make it possible for Rwanda to move from its infant e-Government system of today to a mature and fully operational e-Government system with the following “end-product” characteristics and supporting features:

#### End-Product Features:

- Fully developed and integrated Back Office Administrative and Transactional Systems (BOSs) of Government Ministries, Departments and Public Sector Organizations
- Fully integrated Government Services and Information Systems
- Fully developed Public-Interface Services Applications (PISAs) that integrates with the back office administrative and transaction processing and information systems (BOSs)
- Fully developed Front-End System (FES) that facilitates access to services and information to citizens and business via suitable public access channels and points (PACs)
- Fully managed and maintained electronic Government system based on a robust and integrative system management architecture and platform (SMAP)
- Fully developed and systems support environment provided by Supporting Systems Platform and Processes (SSPPs)

#### Supporting Features I: Institutional Structures, Legal and Technical Standards

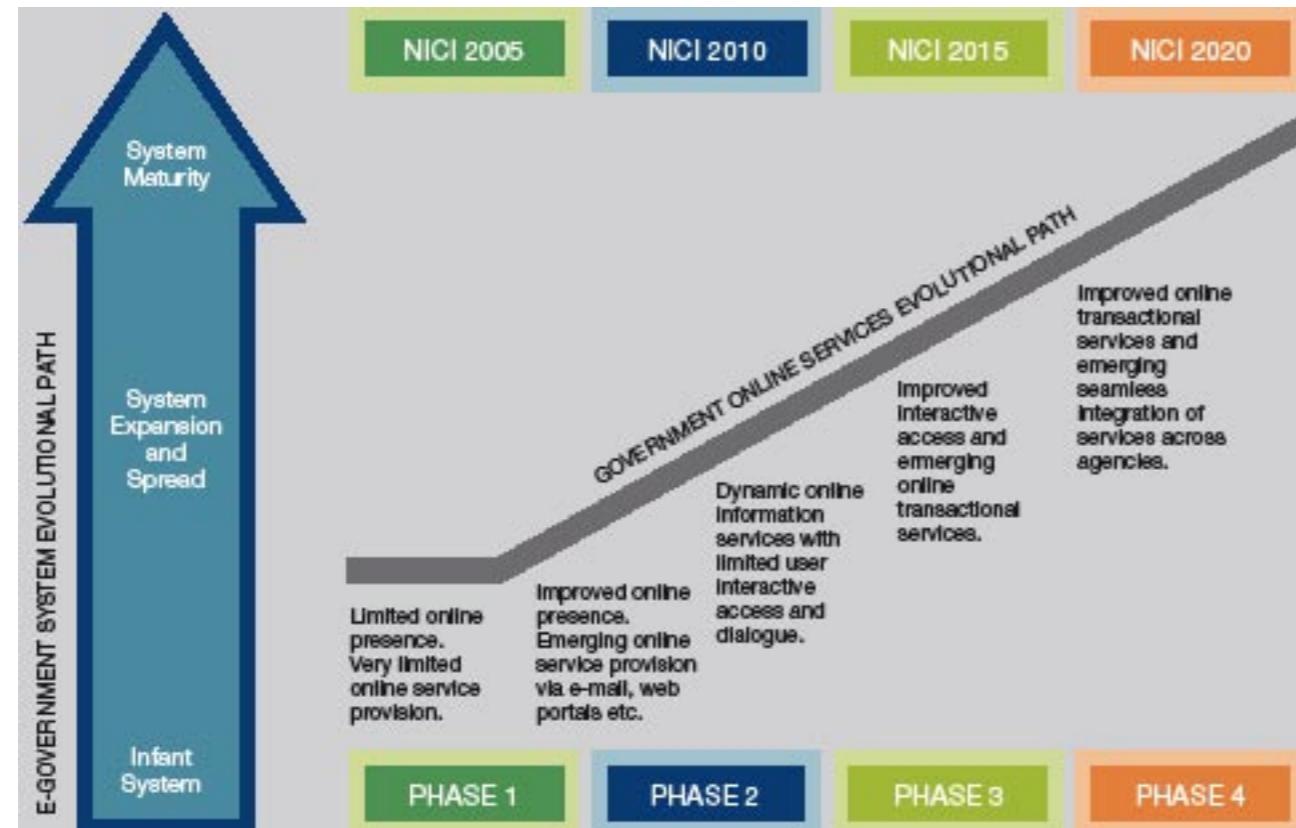
- Fully operational e-Government institutional and management structures
- Enacted e-Government Enabler Laws and Legislations
- Complete Suit of e-Government System roll-out Technical Standards, Specifications

#### Procedures and Guidelines

#### Support Features II: Resources

- High-speed Broadband National Communications Infrastructure (with a constituent high-speed broadband GovNet]
- Adequate Technical, Managerial and Other Relevant Human Resources and Capacities

Figure 21: The Evolution of the System



### DETAILED PROFILE OF SOME SAMPLE PUBLIC INTERFACE APPLICATIONS (PISAS)

*PISA* Social and Community Services

*Type* Community and Public Interest Services and Information Systems

Application System Profile				
Functionality/Description	Provision of Information on Social and Community-based Services to the Public (citizens) as part of a fully fledged G2C system.			
Target Users	Citizens G2C			
Possible PAC to Services	E-mail, Walk-ins, Phone, CIEKs	Web/Portals, PIKs, Telecenters	Online/Offline Intermediaries, Others	
Candidate Provider Agency				
Ministry of Local Government and Social Affairs				
Application Development and Roll-Out Details				
Required System Development Stages	System Requirement Specification and Analysis	System Design (including design of BOS integration)	System Dev. Integration and Deployment	Service Provision and Maintenance
Personnel Required	Consultants and Systems Analysts	System Analysts	System Developers and Programmers	Relevant ITSD with RITA Support
Some Relevant Candidate BOSs				
Some Relevant Candidate BOSs		Some Related PISAs		
Social Services Information System (SOSIS)		Local Community Information Services		
HIV/AIDS Public Information System		Government Information Services		
National Civic Education System		Recreational Services		

*PISA* Educational & Training Opportunity Services

*Type* Community and Public Interest Services and Information Systems

Application System Profile				
Functionality/Description	Provision of Information on educational and training opportunities to the Public (citizens) as part of a fully fledged G2C system.			
Target Users	Citizens G2C			
Possible PAC to Services	E-mail, Walk-ins, Phone, CIEKs	Web/Portals, PIKs, Telecenters	Online/Offline Intermediaries, Others	
Candidate Provider Agency				
Ministry of Education, Ministry of Youth and Sports				
Application Development and Roll-Out Details				
Required System Development Stages	System Requirement Specification and Analysis	System Design (including design of BOS integration)	System Dev. Integration and Deployment	Service Provision and Maintenance
Personnel Required	Consultants and Systems Analysts	System Analysts	System Developers and Programmers	Relevant ITSD with RITA Support
Some Relevant Candidate BOSs				
Some Relevant Candidate BOSs		Some Related PISAs		
National Education and Training Opportunities Database		Social and Community Services		
National Civic Education System		Employment Services		

<i>PISA</i>	Government Information Services
<i>Type</i>	Community and Public Interest Services and Information Systems

Application System Profile				
<i>Functionality/Description</i>	Provision of Government Information (social, political, administrative, economy etc) and Information of Government on Social Services to the Public (citizens, businesses and government employees ) as part of a fully fledged G2C, G2B, and G2G systems.			
<i>Target Users</i>	Citizens, Businesses, Government		G2C, G2B, G2G	
<i>Possible PAC to Services</i>	E-mail, Walk-ins, Phone, CIEKs	Web/Portals, PIKs, Telecenters	Online/Offline Intermediaries, Others	
<i>Candidate Provider Agency</i>	Various Government Ministries and ORINFOR			
Application Development and Roll-Out Details				
<i>Required System Development Stages</i>	System Requirement Specification and Analysis	System Design (including design of BOS integration)	System Dev. Integration and Deployment	Service Provision and Maintenance
<i>Personnel Required</i>	Consultants and Systems Analysts	System Analysts	System Developers and Programmers	Relevant ITSD with RITA Support
Some Relevant Candidate BOSSes				
<i>Some Relevant Candidate BOSSes</i>	<i>Some Related PISAs</i>			
Social Services Information System (SOSIS)	Local Community Information Services			
Communal Information System (COMIS)	Social Services			
Parliamentary Database Information System (PADIS)	Voter Registration Services			

<i>PISA</i>	Investment Information and Services
<i>Type</i>	Community and Public Interest Services and Information Systems
Application System Profile	
<i>Functionality/Description</i>	Provision of Information on Investment Services and Opportunities to the Public both local and foreign (citizens and business) as part of a fully a G2C and G2B system.
<i>Target Users</i>	Citizens and Businesses (Local and Foreign Potential Investors)
<i>Possible PAC to Services</i>	E-mail, Walk-ins, Phone, CIEKs
	Web/Portals, PIKs, Telecenters
	Online/Offline Intermediaries, Others
<i>Candidate Provider Agency</i>	Ministry and Commerce and Industry/Tourism/Ministry of Finance and Economic Planning/RIPA/Commercial Banks/Private Sector Establishments
Application Development and Roll-Out Details	
<i>Required System Development Stages</i>	System Requirement Specification and Analysis
	System Design (including design of BOS integration)
	System Dev. Integration and Deployment
	Service Provision and Maintenance
<i>Personnel Required</i>	Consultants and Systems Analysts
	System Analysts
	System Developers and Programmers
	Relevant ITSD with RITA Support
Some Relevant Candidate BOSSes	
<i>Some Relevant Candidate BOSSes</i>	<i>Some Related PISAs</i>
Rwanda Tax Administration and Info System (R-TAIS)	Financial Services Information and Services
Tourism Promotion Information System (TPIS)	Business Opportunities Services

<i>PISA</i>	Health and Medical Information Services
<i>Type</i>	Community and Public Interest Services and Information Systems

Application System Profile				
<i>Functionality/Description</i>	Provision of Health and Medical Information as well as Information on Government and Private Medical Services to the Public as part of a fully fledged G2C system.			
<i>Target Users</i>	Citizens		G2C	
<i>Possible PAC to Services</i>	E-mail, Walk-ins, Phone, CIEKs	Web/Portals, PIKs, Telecenters	Online/Offline Intermediaries, Others	
<i>Candidate Provider Agency</i>	Ministry of Health, Hospitals and Medical Centers			
Application Development and Roll-Out Details				
<i>Required System Development Stages</i>	System Requirement Specification and Analysis	System Design (including design of BOS integration)	System Dev. Integration and Deployment	
<i>Personnel Required</i>	Consultants and Systems Analysts	System Analysts	System Developers and Programmers	
Some Relevant Candidate BOSSes				
<i>Some Relevant Candidate BOSSes</i>	<i>Some Related PISAs</i>			
National Health Information System (NAHIS)				
Social Services Information System (SOSIS)				
National Nutritional Surveillance Information System				

## APPENDIX 8: THE E-RWANDA PROJECT

### 1. INTRODUCTION

The e-Rwanda project, supported by the World Bank, is being implemented as part of the NICI-2010 Plan. The e-Rwanda project landscape is made up of selected initiatives drawn from a number of the sub-plans of the NICI-2010 Plan. The details of the selected initiatives or Planned Actions are documented in Table 3.

The e-Rwanda project is specifically targeted at interventions that would gradually transform the delivery of public and private services based on the use of modern technology. The initial elements of the project will focus on the implementation of fundamentals of the overall Government strategy (outlined in detail below), and subsequent activities will build upon these improvements. This approach provides a flexible instrument for the implementation of the Government strategy that can be adjusted according to implementation progress: it also represents a long-term commitment on the part of the Government and its cooperating development partners for the implementation of the intended reforms.

The World Bank is offering initial funding of US\$10 million from IDA resources. The total duration of the e-Rwanda project will be four years, during which additional funding will be sought. The overall cost of implementing the e-Government Program is estimated to be much higher than US \$10 million. Government is in the process of mobilizing additional funding for other aspects of the NICI Plan that are not funded by e-Rwanda. It is anticipated that the Government will also contribute substantially to the project.

### 2. PROJECT DEVELOPMENT OBJECTIVE AND KEY INDICATORS

The key objective of the project is to improve the Government of Rwanda's efficiency and effectiveness in key sectors using information and communication technology. This will be accomplished through interventions which:

- Modernize key Government internal systems and processes, namely, (i) improvement of the GOR internal network systems to provide timely and accurate information to support better Government decision making, and (ii) extension of and improvement in

the physical infrastructure<sup>3</sup> in central and a number of decentralized Government offices to support effective delivery of such applications, and;

- Improve services and information access for citizens and the private sector, namely, (i) support to sectoral programs to improve service delivery through business process re-engineering and the use of modern applications, (ii) improvement in the creation, formatting and dissemination of information on relevant sectors to the population at large, and (iii) provision of public access points (kiosks) distributed throughout Rwanda which provide access to information and to Government services.

The project will contribute to the higher objectives of economic growth, better governance and use of resources, improved engagement of the citizenry, and development of the ICT industry, as outlined in the Government's *Vision 2020* statement, the NICI-2010 Plan and the World Bank CAS (2006).

#### Results framework

The results framework and the intended project outcomes were developed through a participatory process involving all major stakeholders: Government staff have contributed greatly to the development of the results framework and have also benefited from a World Bank workshop in February 2006 which focused three days specifically on M&E. A small team was created which attended both the workshop and a special e-Rwanda M&E meeting to flesh out the indicators. During the e-Government workshop in November 2005, groups representing the Government, the Private Sector and Civil Society suggested indicators they believed would best demonstrate success and these were fed into the matrix.

In addition, the IEC staff member from the e-Rwanda team has conducted extensive consultations with communities in rural areas. These communities have been given the opportunity to comment directly on what would directly affect the outcomes of the e-Rwanda project. Table 1 provides a summary of key outcomes and indicators.

<sup>3</sup> This includes basic standards and infrastructure include the definition and implementation of hardware, software, networking, training, etc., to ensure quality, openness and transparency in ICT deployment, so that efficiencies of scale can be achieved. It also insures a better return on R&D and a measure by which to judge public procurement tenders.

Figure 1: E-Rwanda as Part of the NICI-2010 Plan

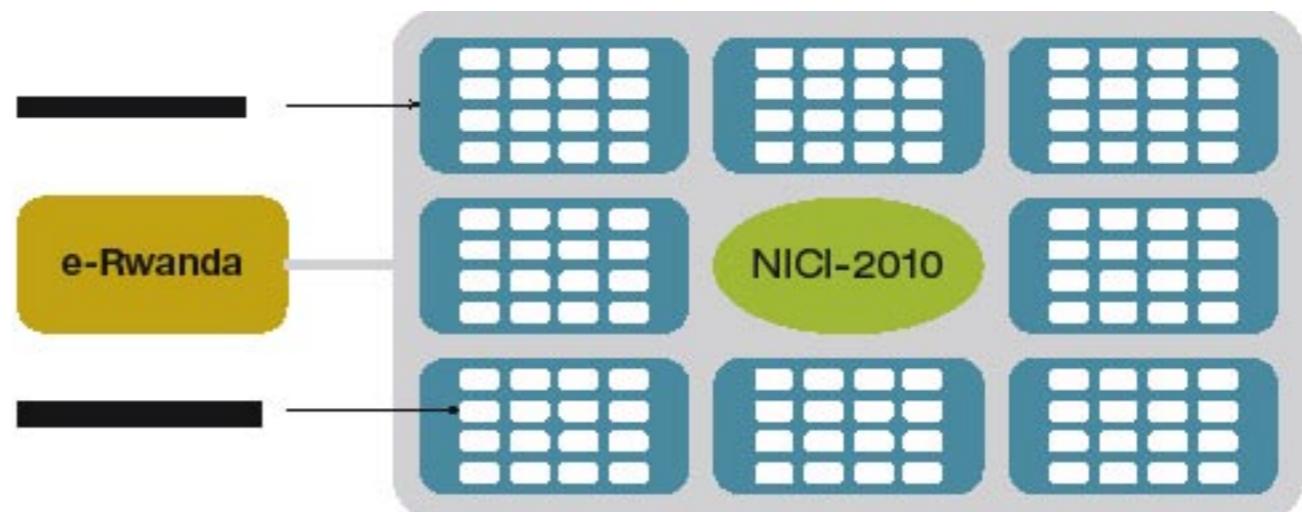


Table 1 – Outcomes and Indicators

OUTCOME	INDICATOR
More efficient delivery of government services and information to citizens and the private sector	(i) Service standards for delivery of sectoral services have significantly improved (ii) Core information in the areas of health, education and agriculture are made available through public access points
Improved infrastructure of government offices	(i) Information exchange within government (central government, provinces and districts) improved based on the use of IT (ii) Government services use modern technology to deliver services in a timely and transparent manner

The project will complement existing activities by the World Bank and other development partners, in particular in the social sectors and in rural development. It draws heavily from the fundamental building blocks laid down in the Public Sector Capacity-Building Project (PSCBP) in the areas of basic support of Government functions, improvement of service delivery, and capacity-building.

### 3. PROJECT COMPONENTS

The project supports four components that focus on the use of technology as an enabler to growth and development. While there are many activities which rely on ICT, in all cases the anticipated results relate to improvement of Government's internal functions, its ability to deliver services and information to its citizens, and its strengthening of the private sector for economic growth and poverty reduction.

Given the complex nature of this cross cutting project, it would not be in the interest of the Government to jump directly into high profile applications for Government or citizens.

As with other large-scale projects, it behooves the Government and the project team to pay close attention to the building blocks of infrastructure before adding upper layers, that is, applications and information. Thus, the first and third components are primarily concerned with the foundation for e-Government (the basic infrastructure to link the ministries and other Government offices, the strengthening of the Government's district offices, and the underlying computer systems which will form the basis of the operating system). Upon that, component two – which focuses on the services for citizens – can be built. Component four is not an application; rather it is a means of building capacity within RITA to undertake a major project.

### Component 1 – Strengthening of Government Effectiveness (US\$ 3.8 million)

This component aims at improving key internal systems of the Government which are considered critical elements for the implementation of the overall development strategy of the Government.

The main focus of this component will be support for (i) the harmonization of the basic technology for the Ministries, the District Offices and the Provincial Offices; and (ii) the implementation of a government intranet which links central ministries and district offices, and which provides availability and easy access to a variety of innovative applications and information services. Support for some of these reforms is already programmed under the World Bank's PSCBP and under the European Union – DFID Trust Fund for Public Financial Management.

The project will build on these reforms and assist the Government in (i) developing standards for the deployment of the new system to central ministries, provincial and district offices, (ii) equipping Ministries and district offices, (iii) putting in place a network infrastructure (WAN) that connects all relevant institutions at the national and sub-national levels, (iv) establishing a cyber-security system which will ensure data accuracy, integrity and interoperability, (v) establishing a maintenance and support infrastructure for the ICT applications, and (vi) ICT training and capacity building activities.

Building upon that base, support under the project will also include the implementation of 'quick wins' or early results, in particular in government services with a direct interface to the population. For example, one application which was urgently requested by the Government was a system to track market prices for agricultural goods. A simple cell phone data entry and query system, backed up by databases at the Ministry of Agriculture, can be designed and implemented within the first year of the project. At a later stage, it is also envisaged to include the modernization of other government services, in particular online access to public tenders and a pilot payment system using mobile cell phone technology and the postal system.

Since Component 1 is so fundamental to the entire project, it is envisioned to cost about US\$ 3.8 million, of which nearly US\$ 2.0 million are civil works and goods/equipment. An additional US\$ 1 million is allocated to training, capacity building and consulting

services, about US\$ 0.3 million is reserved for security and other internet governance activities, and half a million is allocated for operations and maintenance costs.

### Component 2 – Service Delivery Improvements for Citizens and the Private Sector (US\$ 3.5 million)

This component will assist the Government to deliver improved services to citizens and the private sector. It will target primarily the service applications in health, agriculture, environment, and education. These services will be subjected to a re-engineering process with the goal of improving quality, access and service standards. A key element of the reforms will be to improve access to information about basic (health, education, agriculture, environment, judicial) services and to disseminate much needed information that is important for the livelihood of citizens.

To achieve this, the project will support the provision of public access points in urban and rural areas, and the dissemination of information geared primarily towards vulnerable groups, such as women, children, and farmers. Specific interventions will include the dissemination of 'Citizen's Guides' and other crucial information of key government services (e.g., health, education, agriculture, and environment) to districts and local communities.

This information will be provided through public access points or through other means such as the internet, radio, brochures, street theatre, etc. The intervention will complement ongoing PSCBP activities. The project will also provide assistance for the involvement of communities in content development and dissemination mechanisms to better focus public services and to determine what information is essential for local communities.

The project will fund the development and maintenance of public access points in both urban and rural areas so that the services and information can be made available to the public. During the first year of the project, a variety of kiosk models will be explored (public, private, public-private partnerships) as well as a range of mechanisms for the 'care and feeding' of the kiosks. Training for kiosk operators (technical, financial, IT applications) will also be included.

Component two is estimated to cost US\$ 3.5 million, which is primarily divided amongst application

development, public access technologies, information dissemination, and training and capacity building.

### Component 3 – Improving Physical Access to Services Through Enhanced Infrastructure in Energy and Telecommunications (US\$ 0.82 million)

This component will assist government in promoting access to competitive and affordable telecommunications services in remote areas. To this end, the project will strengthen the capacity of the regulatory agency for the telecommunications sector (RURA) and implement funding mechanisms to improve access in rural areas.

The project will support:

- Strengthening RURA's operational efficiency. In this context, technical assistance will be provided to improve the capacity of RURA to effectively regulate and monitor the sector. It will also reinforce the policy and regulatory framework for the use of modern technology and the implementation of e-Government applications.
- Improving basic access infrastructure in financing connectivity to a set of provinces and district offices,

and linking public access points in rural areas to effectively disseminate and exchange information.

Component three is heavily dependant on strengthening and operating costs of infrastructure (such as fiber optics or energy systems) and thus is estimated at US\$ .82 million.

### Component 4 – Project Management (US\$ 1.4 million)

The component will assist the Government to establish a project management system for the change process triggered by the implementation of aforementioned reforms. Support will focus primarily on the Ministry of Infrastructure which will lead the implementation of e-Government reforms and on its implementing agency RITA. The project will also cover the establishment of an adequate quality assurance mechanism to accompany the implementation of the reforms as well as the development of a monitoring and evaluation system for the e-Government reforms. Funds will also be available for technical assistance and analytic studies and to cover the salaries of those RITA staff who are employed as consultants solely dedicated to the project (for a period of 18 months). This component is envisioned to cost approximately US\$ 1.4 million

**Table 2 – Project Components and Total Financing**

Component	Indicative Costs US\$ million	Percent of total
1. Strengthening government effectiveness and efficiency	3.80	38.0
2. Improving service delivery to citizens and private sector	3.51	35.1
3. Improving access to services through enhanced infrastructure in energy and telecommunications	0.82	8.2
4 Project Management	1.47	14.7
Unallocated	0.38	3.8
<b>TOTAL FINANCING REQUIRED</b>	<b>10.00</b>	<b>100%</b>

## 4. LESSONS LEARNED AND REFLECTED IN PROJECT DESIGN

The proposed project reflects the need to better coordinate Government reforms that imply the use of modern technology. It builds on international experiences with the implementation of e-Government reforms. These experiences call for (i) a clear operational focus of the

e-Government agenda that emphasizes the improvement of services rather than the introduction of ICT; (ii) the need to clearly identify reform priorities and to "think small rather than big" to avoid implementation problems, (iii) the need to adjust e-Government interventions to the absorptive capacity within Government and the private sector; (iv) adequate training and capacity-building activities to conceptualize and institutionalize the

intended reforms, and for (v) putting in place project management arrangements with clear and decisive leadership at the technical and political levels.

The operational agenda of the project has been extensively discussed with various stakeholders, in Government, in the private sector and in civil society. These consultations have shaped and influenced both design and sequencing of the project. A key recommendation from these consultations is to put in place an adequate quality assurance mechanism that is able to monitor the implementation of the reforms. It is also envisaged to discuss implementation progress and concern in the context of regular workshops with all relevant stakeholders. It is also planned to conduct regular impact assessments and independent reviews of the implementation progress; the findings will be discussed and the recommendations will be integrated into a revised implementation plan.

## 5. IMPLEMENTATION

### 1. Partnership arrangements

Given the GOR's emphasis on the use of ICT for development, development partners have been encouraged to support the e-Government strategy and the various activities which were chosen to provide the framework for reaching the goals described in the *Vision 2020* statement, namely to convert Rwandan society from one which is primarily agricultural to one which is based on knowledge and information, and to reach middle-income status by the year 2020 through the judicious use of technology.

Several development partners have been particularly forthcoming in their support for ICT in Rwanda. SIDA has been providing logistic and staffing support to RITA, the Rwanda Information Technology Authority for over two years, has funded the creation of the National Computing Center and has contributed to infrastructure needs of ministries. Additional support to RITA has been given by the Swiss Embassy in Kigali, UNDP and the EU. The EU has further provided substantial support to office automation and a document-management system for Parliament. USAID contributed US\$1 million for the Ministry of Justice network system in 2003, and has financed connectivity as well as other ICT activities to schools and farmer's collectives as part of the PEARL project.

DfID has been a substantial contributor to ICT, especially in the field of education – they have funded the

Education Management Information System (eMIS) at MINEDUC and have contributed to the development of e-Learning materials. They have also computerized the Rwanda Revenue Authority.

During pre-appraisal, discussions with JICA yielded the offer to contribute two staff for two years to work on e-Rwanda. The GOR is presently seeking additional support for the implementation of its e-Government strategy and action plan. The African Development Bank (AfDB), the EU and DfID have indicated strong interest in supporting this agenda.

### 2. Institutional and implementation arrangements

The e-Rwanda project will be implemented by the Rwanda Information Technology Authority (RITA), which operates under the authority of the Ministry of Infrastructure (MININFRA). RITA is the Government body mandated to coordinate all ICT projects. Working closely with RITA is the autonomous Human Resource and Institutional Capacity Development Agency (HIDA), which is the coordinating agency of the Government's umbrella program for capacity-building (MSCBP), which is being supported by IDA's PSCBP, amongst others.

A dedicated e-Rwanda implementation team headed by a full-time Project Manager will ensure the day-to-day operations of the project. The team is composed of RITA staff fully integrated into the organizational structure of RITA. It has been agreed with the GOR that the e-Rwanda implementation team will be primarily development focused, although it is recognized that significant ICT skills will also be required. Thus, the team will be multidisciplinary, with experts in institutional development, business process reengineering, change management, training, capacity-building, ICT, financial management, and procurement. Additional assistance in change management, training and capacity-building will be provided by HIDA. The work of the implementation team will be complemented both conceptually and technically by other teams in RITA and in other institutions, in particular by the NICI-2010 Implementation team and the National Computing Center.

It is envisaged that the project will finance incremental salaries of the e-Rwanda implementation team during a transition period within which the GOR will integrate the salaries into the annual budget. The transitional funding would also allow Government to work out

an incentive scheme – consistent with existing salary rules and regulations – that is able to attract qualified personnel into the public sector. It is programmed to fully integrate the costs of project implementation into the budget for the year 2008.

Oversight over the project will be provided at three different levels:

1. Technical oversight will be provided by the RITA Management Team comprising all Heads of Departments and by the RITA Board of Directors comprising representatives from the Government, the private sector and civil society. The Management Team meets on a bi-weekly basis; the RITA regulations foresee up to twelve meetings of Board of Directors per year. Technical discussions will be based on a monthly progress report prepared by the e-Rwanda implementation team.

2. The Minister of State for Energy and Telecommunications, who reports to Cabinet about the implementation of e-Government reforms, will ensure political oversight. The reports to Cabinet are based on quarterly status reports prepared by RITA.

3. Quality assurance will be ensured by a team of international experts (Quality Assurance Group) that will be hired to provide conceptual and technical guidance for the implementation of e-Government reforms. This team will consist of practitioners from other countries that have implemented similar reforms. This group will review the implementation status of e-Rwanda every six months; it will make recommendations to facilitate the implementation of the reforms. The report of the group will be discussed at the technical and political levels.



**Table 3: e-Rwanda Potential Activities by Component**

<b>1. Internal Government applications and fundamental Ministry infrastructure</b>		
<b>1a. Internal Gov apps</b>		
NTB support to e-Procurement	e-Government and e-Governance	Post procurement notices on Government Portal
<b>1b. Internal Infrastructure</b>		
Enhance ICT Infrastructure in Public Sector	Infrastructure, Equipment and Content	Implement the basic building blocks required for the proper functioning of all the other ICT solutions
Convert ICT Equipment and Solutions to Host Kinyarwanda	Infrastructure, Equipment and Content	Provide the necessary interface for ICT equipment and solutions in Rwanda's own language: Kinyarwanda
<b>2. Sectoral Applications and content and the District Information Center</b>		
<b>2a. Citizen's Guides</b>		
The Citizen's Guide to Governmental Procedures	e-Government and e-Governance	Define and document all procedures that the citizen or the private sector needs to interact with the public sector
<b>2a. Health</b>		
Telemedicine and eDiagnosis	Rural and Community Access	Provide or support medical care through the use of electronic communication and information technologies. Support includes diagnostic and treatment tools. Of special interest is the provision of such facilities for rural areas in Rwanda
Delivery of Birth certificates		
<b>2c. Environment and Agriculture</b>		
Agricultural Market Information System	Economic Development	To provide farmers with reliable marketing information that helps them reach their markets more effectively, at lower cost and with wider opportunities
Market and Commodity Exchange	Economic Development	Essentially a market exchange, it will most likely be used by the Agricultural Sector as a means to trade in livestock, agricultural produce and equipment.
Agricultural Credit Management System	Economic Development	Currently, applicants seeking loans from banks or financial institutions have to clear their collaterals with all institutions before they can be granted the loan. Speeding up the loan application process is crucial for their efficient operations and can be extended beyond farmers.
Early Warning System	For a weather tracking services	
<b>2d. Other Content</b>		
Develop Content Material for Media Broadcast	Social Development	To develop and publish content required to empower farmers with knowledge so that they can take part in sustainable agriculture by the use of media broadcast
Publish Terms of Tenders and Bids	To publish details of all tenders and bids issued in Rwanda in one centralized place thus providing opportunity for the Private Sector to a wider set of projects. Furthermore, there is a need to publicize international tenders that Rwandan companies can bid for.	
Use Media to Promote ICT	To use all media (radio, newspapers and TV) to promote ICT in various ways. Education would be a key aim.	
Rwanda Government Portal	e-Government and e-Governance	The purpose is to develop an official Rwanda gateway to all government information and act as the catalyst for a growing electronic Government.
Rwanda National Library Network	Human Capacity Development	To establish a National Library Network allowing improved and increased access to the various Libraries in Rwanda
Text to Audio - Kinyarwanda Talkster	Rural and Community Access	To develop a reader that converts Kinyarwanda text into voice. This would be useful as a reader to those who have reading challenges: illiteracy, blind or the aged.

**2e. DISCs**

Multipurpose Community Telecenters	Rural and Community Access	To set up a large number of community centers available to all citizens. These would be more densely distributed in the rural areas and the urban areas having low income strata. They will have a variety of electronic and non-electronic services supported and available at no charge to the citizens
Virtual Citizen Communities		To allow Citizen to Citizen communications through the use of web based forums. The purpose would be to facilitate open and free communications between communities interested in similar social issues
<b>3. Infrastructure (telecoms and energy)</b>		
Power and Telecoms for DISCs		
<b>4. PSD</b>		
This component has been dropped but e-Rwanda will include consultants to work on IT private sector issues, in framework of Competitiveness project		
Institutional arrangements: Not part of NICI but required for e-Rwanda		
<b>5. Outside e-Rwanda Scope</b>		
National Awards for Excellence in ICT		
A Global Kinyarwanda, English and French Glossary		

## APPENDIX 9: THE NICI-2010 PLAN TASK FORCE AND TEAM OF RESOURCE PERSONS

### Members of the NICI-2010 Plan Task Force

Prof. Silas Lwakabamba (Chairman)	Rector KIST and Chairman, RITA Board of Directors
Dr. Pius Ndayambaje (Vice-Chairman)	ICT Advisor, Office of the President
Hon. Vincent Karega	Minister of State in Charge of Industry and Investment Promotion
Emmanuel Nsanzumuganwa	Secretary General, Ministry of Infrastructure
David Kanamugire	Director General in Charge of ICT, Office of the President
Colonel Diogene Mudenge	Head, Communications Information Systems, Ministry of Defense
Ambassador Zephyr Mutanguha	Director General, CAMERWA
Emmanuel Nsanzumuganwa	Secretary General, Ministry of Infrastructure
Yisa Claver	Director of Planning, Ministry of Education
Gerald Mpyisi	Managing Director, Business Communications Solutions
Albert Nsengiyumva	National University of Rwanda
* Peter Fullarton	Interim Executive Director, RITA
Dr. Raphael Mmasi	Director, National Computing Center, RITA
Moses Bayingana	Coordinator, NICI Implementation Program, RITA
Salvator Niyibizi	Director, e-Government, RITA
Robert Bayigamba	Chairman, Rwanda Private Sector Federation
Eng. Francois Zimulinda	Director General, Rwanda Utility Regulatory Agency
Baloko Makala	ICT Director, Ministry of Infrastructure
Innocent Benineza	Coordinator, Duhamic
Prof. Clement Dzidou	Lead Consultant, United Nations Economic Commission for Africa (UNECA)
* Dr Shem J. Ochuodho	ICT Advisor, Ministry of Infrastructure

(\* Mr. Peter Fullarton replaced Dr. Shem J. Ochuodho mid-way during the NICI-2010 development process).

### Resource Persons

Prof. Clement Dzidou	Lead Consultant, United Nations Economic Commission for Africa (UNECA)
Eng. George Mulamula	Alternate Lead Consultant (KIST)
Akram Najjar	Microsoft Corporation
Khaleed Chebat	Microsoft Corporation
Jean-Loup Khayat	Microsoft Corporation
Antoine Bigirimana	e-Tools
Paul Omany	Independent Consultant
Aoife Hegarty	Independent Consultant
Fred Josiah	Independent Consultant



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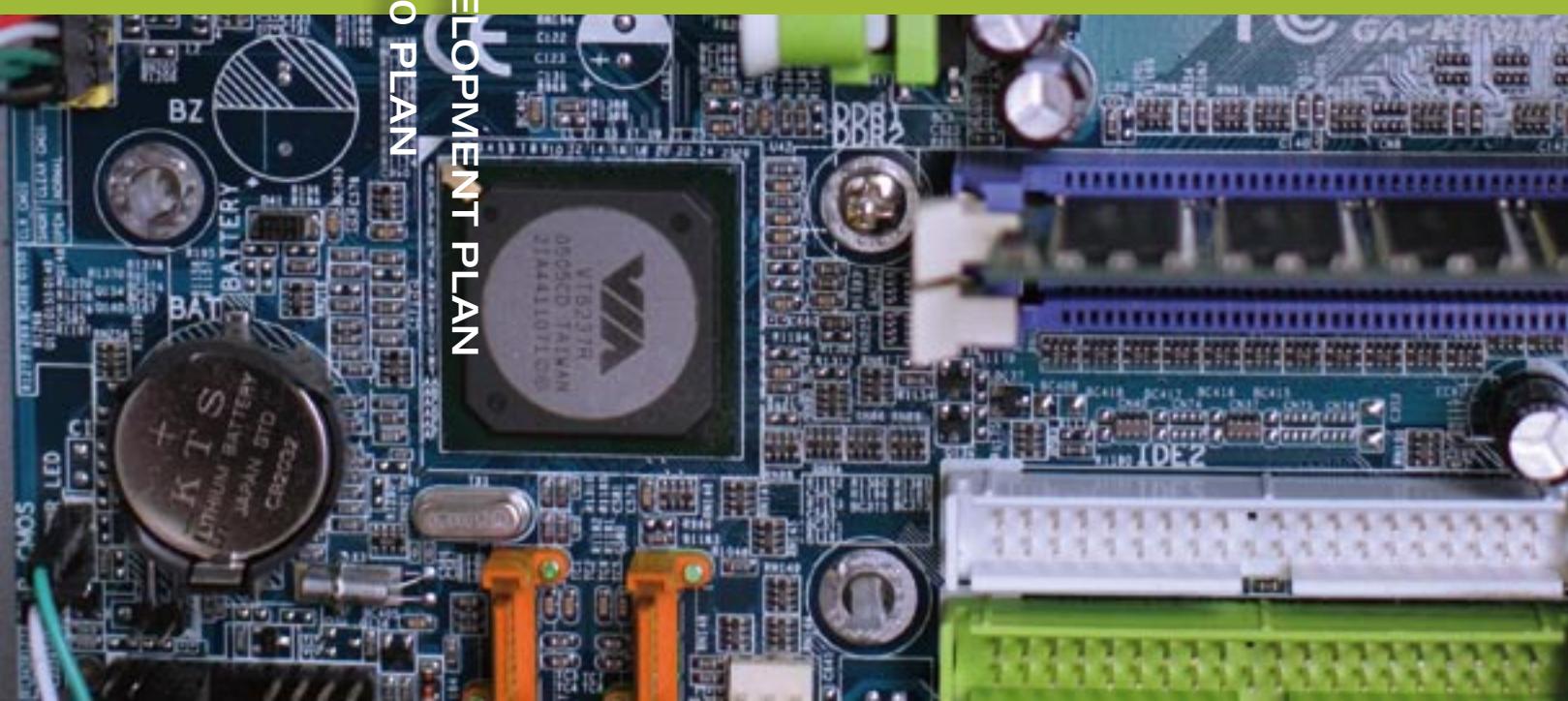
*Design, editing and print production:* Handmade Communications [viv@handmadec.co.za](mailto:viv@handmadec.co.za)



# GOVERNMENT OF RWANDA

AN INTEGRATED ICT-LED SOCIO-ECONOMIC  
DEVELOPMENT PLAN FOR RWANDA 2006-2010

## THE NICI-2010 PLAN



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