IST-Africa 2016
Final Programme

Durban, South Africa

11 - 13 May 2016

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ISTAfrica

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Introduction

IST-Africa 2016 Conference takes place 11 - 13 May 2016 in Durban, as part of **IST-Africa Week 2016**. An activity of **IST-Africa**, which is supported by the European Commission and African Union Commission, **IST-Africa 2016** is the eleventh in an Annual Conference Series bringing together senior representatives from leading public, private, education & research organisations, to discuss ICT policy, showcase research results and share knowledge.

European research activities are structured around consecutive multi-annual programmes, or so-called Framework Programmes. Horizon 2020 sets out the Priorities and thematic areas, including ICT, for 2014 - 2020. Horizon 2020 is fully open to international co-operation with the aim to jointly address major challenges where significant added value is expected to be gained from a world-wide R&D cooperation. In this context, the European Commission has co-funded **IST-Africa** since 2006, to promote African - European research cooperation and support Information Society and ICT aspects of the Africa-EU Strategic Partnership.

Supported by the European Commission, African Union Commission, Department of Science and Technology South Africa, Durban Kwazulu-Natal Convention Bureau, eThekwini Municipality and Technically Co-Sponsored by IEEE, **IST-Africa 2016** focuses on the Role of ICT for Africa's Development and specifically on Applied ICT research in the areas of eHealth, Technology Enhanced Learning and ICT Skills, Digital Libraries, eInfrastructures, eAgriculture, Societal Implications of Technology, International Cooperation, ICT4D and eGovernment. **IST-Africa 2016** will provide a collegiate setting for presentations and discussions of national & regional developments, issues of concern & good practice models, and networking with peers. **IST-Africa 2016** will also provide an opportunity to identify potential partners for future proposals under Horizon 2020.

IST-Africa directly supports Information Society, Innovation and ICT aspects of the Africa-EU Strategic Partnership, the African Ministerial Council on Science and Technology (AMCOST) and the Consolidated Plan of Action for the African Regional Action Plan on the Knowledge Economy (ARAPKE).

The goals of the **IST-Africa** Conference Series are Community Building to facilitate EU-African research cooperation and successful exploitation of research results, to stimulate take-up of RTD results by industry and the public sector, to promote knowledge sharing between commercial, government and research organisations, to exchange experiences about the current state of eAdoption at a sectoral, national or regional level, and to support International Cooperation and open up the European Research Area (ERA) to Africa.

Who will you meet?

IST-Africa 2016 Conference attracts policy makers, practitioners, and researchers from leading commercial, government and research organisations around the world. Unlike many research conferences, **IST-Africa** provides an opportunity to meet with senior managers, practitioners, project managers, software engineers and researchers from industry, government and research organisations. Delegates and speakers attend to share knowledge, experience and lessons learnt, and network with their peers from around the world.

IST-Africa 2016 Conference also provides the unique opportunity to identify partners and opportunities to co-operate in international ICT research projects co-funded by the European Commission under Horizon 2020. Much of the European research results presented in this year's conference were co-funded under the European Commission ICT Programme (FP7/Horizon 2020).

The Venue

IST-Africa 2016 Conference takes place in the Southern Sun Elangeni Hotel, 63 Snell Parade (along the beachfront), Durban, which is 30 - 40 minutes drive from the airport.

The Programme

The 3-day programme features an invigorating mix of business and government case studies, technical and policy papers and interactive workshops. As well as opening and closing plenary sessions, delegates may participate in 42 thematically focused parallel sessions featuring different aspects of International Cooperation, ICT4D, eHealth, eInfrastructures, Technology Enhanced Learning and ICT Skills, Digital Libraries, Mobile Applications, ICT for Environmental Sustainability and eAgriculture, Cyber Security, Societal Implications of Technology and eGovernment. Session Chairs will ensure active discussion and facilitate delegate participation.

The Opening Plenary on Wednesday 11 May features a high level dialogue on Open Innovation, ICT Entrepreneurship and Social Innovation in Africa. The Closing Plenary on Friday 13 May focuses on International Partnership Building.

The programme is subject to change and the **IST-Africa 2016** Organising Committee reserves the right to alter the contents, venue and/or speakers. This Programme is accurate as at 29 April '16.

Networking

Networking is a key feature of the **IST-Africa** Conference Series. Paper and workshop sessions are designed to maximise knowledge sharing by providing time for interactive discussions during the conference programme itself. Coffee breaks and lunch facilitate informal one-on-one and small group discussions following paper or workshop sessions.

The Delegate Showcase on the Conference Portal allows registered delegates, speakers and exhibitors to publish their own short profile and research interests to facilitate networking before, during and after the conference. Leverage this functionality to contact potential partners in advance and arrange to meet during the conference.

Open Innovation, ICT and Social Entrepreneurship in Africa Workshop, 10 May

The IST-Africa Workshop on Open Innovation, ICT and Social Entrepreneurship in Africa on 10 May will provide a forum to discuss and share perspectives on the current level of Collaborative Open Innovation and ICT-based Entrepreneurship and Social Entrepreneurship in Africa.

The objectives of this interactive workshop are to (a) identify the needs of ICT Entrepreneurs and Social Entrepreneurs in different African contexts, (b) identify opportunities to strengthen support currently provided by Innovation Spaces, the education and research sector and public sector agencies responsible for promoting innovation and entrepreneurship and (c) inform the development of a coordinated multi-stakeholder approach to promoting and supporting Open Innovation, ICT Entrepreneurship and Social Entrepreneurship.

Participants will have the opportunity to share insight, identify potential collaborators and contribute to a longitudinal study being undertaken as part of the activities of IST-Africa. Outputs from this workshop will be used to inform research, policy and publications

Conference Proceedings

The **IST-Africa 2016** conference proceedings will be provided to delegates on a USB drive and published on an open access basis in the Paper Repository on the Conference Portal. Following the conference, registered delegates will have access to all PowerPoint presentations, which will be published on the Conference Portal.

Papers that are physically presented during the event will also have the option after the event for their paper to be included in the **IST-Africa 2016** Conference Proceedings submitted for publication in IEEE Xplore.

Security, Health and Safety

Please wear your name badge for all **IST-Africa** activities, as it is your identification and allows you access to the facilities on offer. It is still necessary to take care of bags, personal computers and other personal belongings.

The organisers cannot accept any responsibility for losses incurred or for personal health and safety. Delegates should ensure that they have personal health insurance and take due care when exploring Lilongwe. Any special needs or requirements should be notified to the Conference Secretariat as far in advance of the event as possible.

Hotel Accommodation

Delegates can book accommodation in the Southern Sun Elangeni Hotel (conference hotel) and Garden Court Marine Parade at discounted rates through online registration for **IST-Africa 2016**, based on payment in advance.

Delegates are strongly recommended to book their accommodation early as it will be allocated on a first-paid basis. Hotel accommodation can only be confirmed upon receipt of the associated payment. For further information, please visit:

www.IST-Africa.org/Conference2016

How to get there

Durban is the capital of the Province of KwaZulu-Natal, located on the east coast of South Africa. Durban has a population of c.3 million people and has one of the busiest ports in Africa. Durban is one hour by air from Johannesburg with frequent flight schedules.

The airport is situated 30 - 40 minutes drive from Southern Sun Elangeni Hotel.

While in Durban, delegates and accompanying persons should visit the 'Golden Mile' (beachfront area), uShaka Marine World, City Hall and Botanical Gardens. Other places in interest around Durban include: Hluhluwe-Imfolozi Game Reserve, Drakensberg Mountains, the Giant's Castle World Heritage Site and the Valley of 1000 Hills.

Support Organisations

IST-Africa 2016 offers a variety of Sponsorship Opportunities to enhance your organisation's image & standing with the international IST research community.

IST-Africa 2016 is supported by the Department of Science and Technology, South Africa, Durban KwaZulu-Natal Convention Bureau and eThekwini Municipality.

For further information in relation to providing support, please contact the Conference Secretariat at **secretariat@IST-Africa.org**

Plenary Session Speakers

H.E. Naledi Pandor
Minister of Science and Technology, South Africa

Phil Mjwara
Director-General, Department of Science and Technology, South Africa

H.E. Hlengiwe Buhle Mkhize
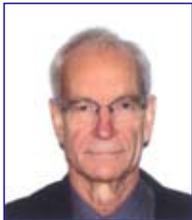*Deputy Minister DTPS, South Africa*

Dr Setumo Mohapi
CEO, State Information Technology Agency, South Africa

Daan du Toit
Deputy Director-General, International Cooperation and Resources, DST, South Africa

Imraan Patel
Deputy Director-General responsible for ICT, DST, South Africa

Mr Morten Møller
Senior Advisor to European Commission

Dr Pascal Hoba
CEO UbuntuNet Alliance

Barlow Manilal
CEO, Technology Innovation Agency, South Africa

Warren Hero
Chief Technology Officer, Microsoft South Africa

Prof. Darelle Van Greunen
Nelson Mandela Metropolitan University, South Africa

Mpho Matsitse
Industry Value Advisor, Information Technology Association of South Africa

Plenary Speakers as at 06 May 2016 include:

- **H.E. Naledi Pandor,** Minister of Science and Technology, South Africa
- **Phil Mjwara,** Director-General, Department of Science and Technology, South Africa
- **H.E. Hlengiwe Buhle Mkhize,** Deputy Minister Telecommunication and Postal Services, South Africa
- **Dr Setumo Mohapi,** CEO, State Information Technology Agency, South Africa
- **Daan du Toit**, Deputy Director-General, International Cooperation and Resources, Department of Science and Technology, South Africa
- **Imraan Patel**, Deputy Director-General responsible for ICT, Department of Science and Technology, South Africa
- **Morten Moller,** Senior Advisor to European Commission, Belgium
- **Anneline Morgan,** Senior Technical Advisor, Southern African Development Community, Botswana
- **Imraan Patel**, Deputy Director-General responsible for ICT, Department of Science and Technology, South Africa
- **Dr Setumo Mohapi**, CEO, State Information Technology Agency (SITA), South Africa
- **Dr Pascal Hoba**, CEO, UbuntuNet Alliance, Malawi
- **Barlow Manilal**, CEO, Technology Innovation Agency (TIA), South Africa
- **Warren Hero**, Chief Technology Officer, Microsoft South Africa
- **Dr Gansen Pillay**, Deputy CEO, National Research Foundation, South Africa
- **Stephane Hogan**, Science Counsellor at the EU Delegation to the African Union, Ethiopia
- **Prof. Darelle van Greunen**, School of ICT, Nelson Mandela Metropolitan University, South Africa
- **Prof. Maurice Mars**, Department of TeleHealth, University of Kwazulu-Natal, South Africa
- **Mr Mpho Matsitse**, Industry Value Advisor, Information Technology Association of South Africa
- **Martin Weiss**, Senior Technical Officer, MRC-PATH Global Health Innovation Accelerator, South Africa
- **Tsietsi Maleho**, General Manager: Monitoring, Evaluation & Partnerships, The Innovation Hub, South Africa

International Programme Committee

A distinguished Programme Committee has been formed to review and provide feedback on papers and presentations, and chair sessions.

The **IST-Africa 2016** International Programme Committee includes

- **Paul Cunningham** (Conference Chair), IIMC International Information Management Corporation Ltd, Ireland
- **Tiwonge Msulira Banda**, Ubuntunet Alliance, Malawi
- **Laurens Cloete**, Meraka Institute, CSIR, South Africa
- **Miriam Cunningham**, IIMC International Information Management Corporation Ltd, Ireland
- **Kim Davis**, Research Council of Norway, Norway
- **Prof. Love Ekenberg**, DSV, University of Stockholm, Sweden
- **Dr. Charmayne Hughes,** Health Equity Institute, San Francisco State University, USA
- **Dr. Mike Joy,** University of Warwick, United Kingdom
- **Dr. Chipo Kanjo**, Department of Computer Science, Chancellor College, University of Malawi, Malawi
- **Emmanuel Kweyu**, @iLabAfrica, University of Strathmore, Kenya
- **Vasilis Koulolias**, eGovLab, Stockholm University, Sweden
- **Kristiina Lahde**, 4Front, Finland
- **Dr. Sirkku Männikkö Barbuti**, DSV, Stockholm University, Sweden
- **Dr. Johann Marquez-Barja**, Trinity College Dublin, Ireland
- **Prof. Maurice Mars**, University of KwaZulu-Natal, South Africa
- **Richard Stevens**, Stevens Consultants, Italy
- **Dr. Binyam Tilahun**, University of Gondar, Ethiopia
- **Dr Marita Turpin**, Department of Informatics, University of Pretoria, South Africa
- **Prof. Darelle Van Greunen**, NMMU, South Africa

Organising Committee

- **Miriam Cunningham,** IIMC, Ireland
- **Paul Cunningham,** IIMC, Ireland
- **Francois Davel,** Department of Science and Technology, South Africa

Conference Secretariat

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www.IST-Africa.org/Conference2016

1 DAY

Wednesday, May 11, 2016

08:00 — Registration

09:00 Opening Plenary 1a: Opening Plenary

Opening Remarks
Daan du Toit, Deputy Director-General, International Cooperation and Resources, Department of Science and Technology, South Africa

EU Africa Cooperation
Morten Møller, Senior Advisor to European Commission, Belgium

African Union Commission Address
Presenter to be confirmed

SADC Address
Anneline Morgan, Senior Technical Advisor, Southern African Development Community, Botswana

Speech from DTPS
H.E. Hlengiwe Buhle Mkhize, Deputy Minister, Department of Telecommunications & Postal Services, South Africa

Official Opening Speech
Phil Mjwara, Director-General, Department of Science and Technology, South Africa

10:30 — Coffee Break

11:00 Plenary Session 2a: High-level Roundtable on Open Innovation, ICT Entrepreneurship and Social Innovation in Africa

Moderator: Paul Cunningham, IIMC, Ireland

Panelists confirmed to date include:
Mr Imraan Patel, DST Deputy Director General responsible for ICT, Department of Science and Technology, South Africa

Dr Gansen Pillay, Deputy Chief Executive Officer: Research and Innovation Support and Advancement, National Research Foundation, South Africa

Dr Pascal Hoba, CEO, UbuntuNet Alliance

Warren Hero, Chief Technology Officer, Microsoft South Africa

Martin Weiss, Senior Technical Officer, MRC-PATH Global Health Innovation Accelerator, South Africa

Prof. Maurice Mars, Department of TeleHealth, University of Kwazulu-Natal, South Africa

Tsietsi Maleho, General Manager: Monitoring, Evaluation & Partnerships, The Innovation Hub

Mr Lee Annamalai, Manager: Earth Observation ICT Systems Group, CSIR, South Africa

12:30 — Lunch

14:00 Workshop 3a: Horizon 2020 Opportunities for Research Cooperation

Chair: Paul Cunningham, IIMC, Ireland

Introduction to Horizon 2020
Paul Cunningham, IIMC, Ireland

Overview of Results from ICT-39-2015 and Opportunities under ICT-39-2017
Morten Møller, Senior Advisor to European Commission, Belgium

Overview of Horizon 2020 Participation Rules & Instruments
Miriam Cunningham, IIMC Ltd, Ireland

Proposal Preparation
Paul Cunningham, IIMC, Ireland

Discussion, Q&A

14:00 Session 3b: eGovernment I

Chair: Zauria Saifodine, National Institute for ICT, Mozambique

IIntroducing E-Government in Developing Countries- Analysis of the Egyptian e-Government Services
Othoman Elaswad, Technical university of Denmark, Denmark

A Framework for the Monitoring and Evaluation of e-Governance Projects in Developing Countries
Sylvester Hatsu, School of Computing, University of South African/ Accra Polytechnic, Ghana

E-government Development in Sub-Saharan Africa (SSA): Relationship with Macro Level Indices and Possible Implications
Silas Formunyuy Verkijika, University of the Free State, South Africa

ICT Readiness for Business Continuity in Local Government
Ruan Koen, Nelson Mandela Metropolitan University, South Africa

14:00 Session 3c: Technology-enhanced Learning I

Chair: Gift Kadzamira, National Commission for Science and Technology, Malawi

Using Mobile Moodle to Improve Accessibility and Usage of Moodle LMS at the University of Dar es Salaam
Joel Mtebe, University of Dar es Salaam, Tanzania

Designing Adaptive Learning Support through Machine Learning Techniques
Elizaphan Maina, Kenyatta University, Kenya

Students' Perceptions of Computer-Based Assessments: A Case of UKZN
Victor Faniran, University of KwaZulu-Natal Pietermaritzburg campus, South Africa

Electronic Proofs and Electronic Assessments in an Educational Context transferred to South African Conditions
Miriam Krieger, Westphalian Wilhelms-University of Muenster, Germany

Motivators for Teachers to Implement a New Curriculum: A Structural Equation Modelling
Lovemore Motsi, Unisa, South Africa

14:00 Session 3d: Digital Content

Chair: Tiwonge Msulira Banda, UbuntuNet Alliance, Malawi

Access, Skills and Development in Africa: Local Knowledge in Local Languages
Grant McNulty, McNulty Consulting / University of Cape Town, South Africa

The Effects of a Corpus on isiZulu Spellcheckers based on N-grams
Balone Ndaba, University of Cape Town, South Africa

Preservation of Digital Research Content in Academic Institutions: A Case Study of Moi University, Kenya
Juliet Erima, Moi University, Kenya, Kenya

16:00 Session 3e: Mobile Applications I

Chair: Peacemaker Dlamini, Department of Science and Technology, South Africa

Bring Your Own Disaster Recovery (BYODR)
Jaco du Toit, University of Johannesburg, South Africa

Governing Information Security within the Context of "Bring Your Own Device in SMMEs"
Noluvuyo Fani, Nelson Mandela Metropolitan University, South Africa

A Model for the Delivery of SMS and USSD Location-based Mobile Advertising Using Network-based Positioning
Moses Thiga, Kabarak University, Kenya

RootIO: ICT + Telephony for Grassroots Radio
Christopher Csikszentmihalyi, M-ITI, Portugal

Contribution of Mobile Messaging Applications to Improve Citizen Security
Paul Dayang, The University of Ngaoundere, Cameroon

16:00 Session 3f: Societal Implications of Technology I

Chair: Ebenhezer Kauhonina, National Commission on Research,Science and Technology, Namibia

Citizen Engagement in Cape Town's Transition Towards a Smart City
Jozua Kloppers, Cape Peninsula University of Technology, South Africa

A Mobile Based Technology Platform for Citizen Engagement in Malawi
Rachel Sibande, Rhodes University, South Africa

Power to the People - Unintended Effects of ICTs in Democracies
Chipo Kanjo, University of Malawi, Chancellor College, Malawi

Mobile App Usage as a Dynamic Capability in Nigerian Start-ups

Adebowale Owoseni, UNISA / Union Bank of Nigeria Plc, Nigeria

15:30	Coffee Break

16:00 Workshop 4a: IST-Africa - Research Capacities & Priorities I

Chair: Paul Cunningham, IIMC, Ireland

ICT Research Capacity in South Africa
Peacemaker Dlamini, Department of Science and Technology, South Africa

ICT Research Capacity in Malawi
Gift Kadzamira, National Commission for Science and Technology, Malawi

ICT Research Capacity in Lesotho
Lieketseng Tjokotsi, Department of Science and Technology, Lesotho

ICT Research Capacity in Botswana
Phodiso Potesh Phole, Ministry of Transport and Communications, Botswana

ICT Research Capacity in Mozambique
Zauria Saifodine, National Institute for ICT, Mozambique

ICT Research Capacity in Mauritius
Ashwin Seegolam, National Computer Board, Mauritius

ICT Research Capacity in Burundi
Augustin Nsabiyumva, Ministry of Higher Education and Scientific Research, Burundi

ICT Research Capacity in Kenya
Jacob Njagih, Ministry of Education, Science and Technology, Kenya

16:00 Session 4b: eGovernment II

Chair: Vasilis Koulolias, eGovlab, Sweden

Simulation Models in eGovernment using System Dynamics: A Literature Survey
Ahmed Abdelgawad, University of Agder, Norway

The e-Government Paradox: Is it Real and How can it be Resolved?
Ibrahim Otieno, University of Nairobi, Kenya

The Implementation of an E-Government System in Developing Countries: A Case of Taita Taveta County, Kenya
Tabitha Mberi, Strathmore University, Kenya

Scenario-based IT Risk Assessment in Local Government
Unathi Mcube, NMMU, South Africa

16:00 Session 4c: Technology-enhanced Learning II - mLearning

Chair: Marita Turpin, University of Pretoria, South Africa

Gamifying Mobile Micro-Learning for Continuing Education in a Corporate IT Environment
Laurie Butgereit, Nelson Mandela Metropolitan University, South Africa

mTiCalc – A Student-driven ICT Project for Solving Local Forestry Learning and Community Problems in Kenya
Mark Gachara Irura, University of Eastern Finland, Kenya

Lecturer and Policy Readiness: A Critical Relationship in the Provision of Mobile Centric Services in Teaching
Baldreck Chipangura, Unisa, South Africa

Changes in the m-Learning Configuration of a Secondary School Mathematics Service: The Case of Microsoft Math (South Africa) from 2008-2015
Nicky Roberts, University of Johannesburg, South Africa

16:00 Session 4d: Future Internet & IoT

Chair: Chipo Kanjo, University of Malawi, Chancellor College, Malawi

Internet of Things Technologies in Smart Cities
Nomusa Dlodlo, CSIR, South Africa

Towards an Adaptive Ontology Based Model for Interoperability in Internet of Things (IoT)
Edmore Chindenga, University of Fort Hare, South Africa

The Internet of Things for South African Tourism
Oscar Gcaba, CSIR, South Africa

A Security Algorithm for Wireless Sensor Networks in the Internet of Things Paradigm
Ts'itso Maphats'oe, CUT, Lesotho

A Design Approach to Adapting Maker-Community Projects to the IoT Constrained Device Philosophy
Andrew Cyrus Smith, CSIR Meraka Institute, South Africa

16:00 Session 4e: Mobile Applications II

Chair: Haitham Hamza, Information Technology Industry Development Agency (ITIDA), Egypt

Branchless Banking in Rural Malawi: Potential Customers' Perspective on Bank-led Mobile Banking
Tiwonge Manda, University of Malawi, Chancellor College, Malawi

Towards Non-cash Payments in Tanzania: the Role of Mobile Phone Money Services
Hosea Mpogole, University of Iringa, Tanzania

Towards A Context-Aware Multi-Channel Messaging Model for African Banks: Preliminary Investigations
Olusola Salami, University of South Africa, Nigeria

Promoting Savings among Low Income Earners in Kenya through Mobile Money
Patrick Kanyi Wamuyu, USIU-Africa, Kenya

16:00 Session 4f: Societal Implications of Technology II

Chair: Lefa Thamae, Department of Science and Technology, Lesotho

ICT Adoption and Use in Zimbabwean SMEs
Peter Makiwa, University of Pretoria, Zimbabwe

Factors Affecting the Use of Social Media as a Crisis Communication Tool in South Africa
Trishana Ramluckan, University of KwaZulu-Natal, South Africa

Analysing Barriers in the Implementation of National ICT Policy: Case of Malawi
Frank Makoza, University of Cape Town, South Africa

A Profile-Aware Microtasking Approach for Improving Task Assignment in Crowdsourcing Services
Jabu Mtsweni, CSIR, South Africa

Mitigating User Concerns to Maximize Trust on Cloud Platforms
Roxanne Piderit, University of Fort Hare, South Africa

17:30	End of Parallel Sessions

2 DAY
Thursday, May 12, 2016

09:00 Workshop 5a: IST-Africa - Research Capacities & Priorities II

Chair: Paul Cunningham, IIMC, Ireland

ICT Research Capacity in Namibia
Ebenhezer Kauhonina, National Commission on Research,Science and Technology, Namibia

ICT Research Capacity in Cameroon
Njei Check, National Agency for Information and Communication Technologies (ANTIC), Cameroon

ICT Research Capacity in Egypt
Haitham Hamza, Information Technology Industry Development Agency (ITIDA), Egypt

ICT Research Capacity in Senegal
Toumane Doumbouya, Ministère de l'Enseignement Supérieur et de la Recherche, Senegal

ICT Research Capacity in Tunisia
Mourad Zghal, Ministry of Higher Education and Scientific Research, Tunisia

ICT Research Capacity in Ethiopia
Leulseged Alemie, Ministry of Communications and Information Technology, Ethiopia

ICT Research Capacity in Tanzania
Jim Yonazi, Commission for Science and Technology (COSTECH), Tanzania

ICT Research Capacity in Uganda
Loi Namugenyi, Uganda National Council for Science & Technology, Uganda

09:00 Session 5b: eGovernment III

Chair: Vasilis Koulolias, eGovlab, Sweden

Towards Corporate Governance of ICT in Local Government
Petrus Delport, Nelson Mandela Metropolitan University, South Africa

E-government Websites User Experience from Public Value Perspective: Case Study of iTax Website in Kenya
Gabriel Kamau, Murang'a University College, Kenya

Automating Revenue Collections in Kenya: A Case of Kiambu County
Collins Oduor, Strathmore University, Kenya

User Acceptance of Legacy Systems Integration
Reuben Mathule, Department of Rural Development and Land Reform, South Africa

09:00 Session 5c: Technology Enhanced Learning III

Chair: Jacob Njagih, Ministry of Higher Education Science and Technology, Kenya

The Promise of Grid Computing Technologies for e-Learning Systems in Kenya
Elyjoy Micheni, The Technical University of Kenya, Kenya

ICT4D 2.0 Studies in Virtual Environment: Context and User Needs to Foster Learning Process
Nicholas Mavengere, University of Tampere, Finland

Pre-Service Teacher's Understanding of LEAP21 Learning Design Elements in MOOC Environments
Jameson Goto, University of Johannesburg, South Africa

Cloud Computing to support Virtual Classrooms – Benefits and Challenges
Roopesh Kevin Sungkur, University of Mauritius, Mauritius

Technology Integration in the Classroom: A Case of Students Experiences in Using Edmodo to Support Learning in a Blended Classroom in a Kenyan University
Rhoda Gitonga, Kenyatta University, Kenya

09:00 Session 5d: Future Internet II

Chair: Peacemaker Dlamini, Department of Science and Technology, South Africa

A Review of Service Discovery Schemes in Wireless Mesh Networks
Lungisani Ndlovu, Tshwane University of Technology, South Africa

Handoff Delay Reduction Model for Heterogeneous Wireless Networks
Topside Mathonsi, Tshwane University of Technology, South Africa

Main Trade-offs for Energy Efficiency in Cognitive Radio Networks
Efe Orumwense, University of KwaZulu-Natal, South Africa

An Improved-Cross Layer Scheduling Model for Intelligent Home Networks
Kevin K'Obwanga, Tshwane University of Technology, South Africa

Remote Sensor Network for Off-Grid Renewable Energy Monitoring
Zenville Erasmus, University of The Western Cape (UWC), South Africa

09:00 Workshop 5e: Value-added Connectivity for Research and Education in Africa I

Chair: Bonny Khunga, ZAMREN, Zambia

AfricaConnect2: Networking research and Education in Africa
Pascal Hoba, Ubuntunet Alliance, Malawi

State of the art of the Research Networking Infrastructure - Eastern and Southern Africa
Tiwonge Msulira Banda, UbuntuNet Alliance, Malawi

State of the art of the Research Networking Infrastructure - North Africa
Salem Alagtash, German Jordanian University and the Arab States Research and Education Network - ASREN, Jordan

State of the art of the Research Networking Infrastructure - West and Central Africa
Omo Oaiya, WACREN, Ghana

10:30   Coffee Break

11:00 Session 6a: IST-Africa - Showcasing Activities of IEEE SIGHT Volunteers in Africa

Chair: Paul Cunningham, IIMC, Ireland

Introduction to IEEE Humanitarian Activities Committee (HAC)
Paul Cunningham, IIMC, Ireland

Introduction to IEEE SIGHT
Miriam Cunningham, IIMC Ltd, Ireland

IEEE SIGHT Activities in Uganda
Lwanga Herbert, LOG`EL PROJECT / IEEE SIGHT, Uganda

IEEE SSIT / IST-Africa SIGHT Activities
Paul Cunningham, IIMC, Ireland

Brainstorming in relation to ICT4D Volunteer Activities in Africa

11:00 Session 6b: eHealth I

Chair: Zauria Saifodine, National Institute for ICT, Mozambique

Towards Web-Assisted Self-Care in Developing Countries: A Challenge for Health Posts and Pharmacies
Juha Puustjärvi, University of Helsinki, Finland

Comparison of Frameworks and Models for Analyzing Determinants of Maternal Mortality and Morbidity
Richard Millham, Durban University of Technology, South Africa

Smart Under-Five Health Care System
Tawachi Nyasulu, University of Leeds, Malawi

Accessing Medical Emergency Services
Mateus Padoca Calado, Faculdade de Ciências - Universidade Agostinho Neto, Angola

An eHealth Android Application for Mobile Analysis of Microplate Assays
Michelle Kuttel, University of Cape Town, South Africa

11:00 Session 6c: Technology Enhanced Learning IV

Chair: Lieketseng Tjokotsi, Department of Science and Technology, Lesotho

Development of an Online Biometric-enabled Class Attendance Register System
Victor Adeniji, University of Fort Hare, South Africa

A Low Cost Laboratory for Enhanced Electrical Engineering Education
Ciira Maina, Dedan Kimathi University of Technology, Kenya

Teachers' Technology Uptake, a Case of GeoGebra in Teaching Secondary School Mathematics in Kenya
Irene Mwingirwa, Africa Nazarene University, Kenya

Using a Productive Distance PhD Program to Empower Women in Academia
Izzeldin Osman, Sudan University of Science and Technology, Sudan

Exploring Teacher Adoption and Use of an Upgraded eLearning Platform for ICT Capacity Building at University of Rwanda
Jean Claude Byungura, Stockholm University, Rwanda

11:00 Session 6d: Future Internet III

Chair: Njei Check, National Agency for Information and Communication Technologies (ANTIC), Cameroon

Smart City Technology based Architecture for Refuse Disposal Management
Joke Oluwatimilehin Adeyemo, Durban University of Technology, South Africa

Ubiquitous Traffic Management with Fuzzy Logic Case Study of Maseru, Lesotho
Tumisang Liphoto, Central University Of Technology, Lesotho

Smart Water Leakage Detection and Metering Device
Khmaies Ouahada, University of Johannesburg, South Africa

A Comparison of the Collection Tree Protocol (CTP) and AODV Routing Protocols for a Smart Water Metering Network in Tsumeb, Namibia
Clement Nyirenda, University of Namibia, Namibia

11:00 Workshop 6e: Value-added Connectivity for Research and Education in Africa II

Chair: Salem Alagtash, German Jordanian University and the Arab States Research and Education Network - ASREN, Jordan

NREN and Telecom Companies Synergies: Lessons from Zambia
Bonny Khunga, ZAMREN, Zambia

Benefiting from an NREN Network
Lydia Chabala, University of Zambia, Zambia

Towards a Complete Stakeholder Engagement in AfricaConnect2
Manuella Abram, GÉANT, United Kingdom

12:30	Lunch

14:00 Session 7a: ICT4D I - eEducation

Chair: Jacob Njagih, Ministry of Higher Education Science and Technology, Kenya

Sustainable Cooperative Distance Learning System for Education in Developing Countries
Elisa Ferrara, University of Genoa, Italy

Implementation of a Tablet Project at an African Medical School: Process and Critical Success Factors
Masego Kebaetse, University of Botswana, Botswana

TV White Space Usage in Education: An Overview of GTUC TV White Space Network in Accra, Ghana
Dominic Kofi Louis, Ghana Technology University College, Ghana

14:00 Session 7b: eHealth II

Chair: Darelle Van Greunen, Nelson Mandela Metropolitan University, South Africa

A Digital Health Innovation Ecosystem for South Africa
Marlien Herselman, Meraka Institute, CSIR, South Africa

mHealth Implementation in South Africa
Adele Botha, CSIR Meraka Institute, South Africa

Transmitting a Biomedical Signal in a TV White Spaces Network
Jonathan Pinifolo, University of Johannesburg, South Africa

Evolving Adaptable Service Oriented Solutions for Development through Citizen Observatory Portals
Silvester Namuye, USIU, Kenya

HealthMessenger: An e-Health Service to Support ICT Deployments in Poor Areas
Chikumbutso Gremu, Office of the Vice President, Malawi

14:00 Session 7c: eAgriculture

Chair: Lefa Thamae, Department of Science and Technology, Lesotho

Use of Social Media to Strengthen Service Delivery for Urban Agriculture in Uganda
Fatuma Namisango, Makerere University Business School, Uganda

IT and the Non-formal Sector: How can IT propel Skills Development in Agriculture?
Collins Mwesigwa, UNCST, Uganda

A Model Intelligent Decision Support System for Predicting Late Blight Disease of Potatoes in Kenya
David Gichoya, Moi University, Kenya

Development of Adaptive Environmental Management System: A Participatory Approach through Fuzzy Cognitive Maps
Mpho Mbele, Central University of Technology, South Africa

An m-Agric Application for Broadcasting Agricultural Information for Subsistence Farmers in Rural Areas of the Eastern Cape
Nam Nojozi, University of Fort Hare, South Africa

14:00 Session 7d: eServices

Chair: Haitham Hamza, Information Technology Industry Development Agency (ITIDA), Egypt

UDUBSit. A Location Based Mobile Application for the University of the Western Cape - A Living Lab Approach in Support of Participatory ICT4D
Leona Craffert, UWC, South Africa

Development of a Location Based Service for Technician Allocation
Xolani Delman, University of Fort Hare, South Africa

Open Transport Map - Routable OpenStreetMap
Pavel Hájek, University of West Bohemia, Czech Republic

Prototyping Smart City Applications over Large Scale M2M Testbed
Nyasha Mukudu, University of Cape Town, South Africa

A Framework for Enterprise Application Integration for Third-Party Logistics
Mpho Makhatho, Tshwane University of Technology, South Africa

14:00 Workshop 7e: Value-added Connectivity for Research and Education in Africa III

Chair: Pascal Hoba, Ubuntunet Alliance, Malawi

Developing a Strategy for Federated Services in Sub-Saharan Africa
Omo Oaiya, WACREN, Ghana

Regional Science Gateways and Publication Tools: the Arab States Science Grid
Salem Alagtash, German Jordanian University and the Arab States Research and Education Network - ASREN, Jordan

Global Collaboration Opportunities
Thomas Fryer, GÉANT, United Kingdom

15:30	Coffee Break

16:00 Session 8a: ICT4D II - eEducation

Chair: Gift Kadzamira, National Commission for Science and Technology, Malawi

Barriers to Electronic Access and Delivery of Educational Information in Resource Constrained Public Schools: A Case of Greater Tubatse Municipality
Tholo Pholotho, University of South Africa, South Africa

Cloud SAMS: Cloud Computing Solution for Public Schools within South Africa's 'Second Economy'
Gerald Muriithi, Central University of Technology, South Africa

Gender Differences in the Adoption of Web 2.0 Technologies by Students in two Universities in Kenya
Rose Njoroge, Kenyatta University, Kenya

African Heritage: A True Asset
Alfredo M. Ronchi, Politecnico di Milano, Italy

16:00 Session 8b: mHealth III

Chair: Loi Namugenyi, Uganda National Council for Science & Technology, Uganda

Integrating mHealth Applications: Motivation, Approach and Outcomes
Chris Kulanga, D-tree International, Malawi

Applying Bridges Framework to Investigate Challenges to the Adoption of mHealth in Burundi
Patrick Ndayizigamiye, University of KwaZulu-Natal, South Africa

Impact of mHealth Solutions on Health Care Services Provided by Community Health Workers: A Case of Nkhotakota District
Zalerapi Chirwa, Kamuzu Academy, Malawi

Leveraging 3D Printing for Prosthetics
Neil van der Merwe, Durban University of Technology, South Africa

16:00 Session 8c: eAgriculture & Environmental Sustainability

Chair: Lieketseng Tjokotsi, Department of Science and Technology, Lesotho

Traceability Systems in Swaziland and Namibia: Improving Access to Markets with Digital Information
Tania Prinsloo, University of Pretoria, South Africa

Prototyping mAgriculture Applications among Smallholder Farmers
Bonface Ireri, University of Free State, South Africa

Provisional Findings on Linking Climate Information to Livelihood Strategies through ICTs among Rural Women in Kitui County, Kenya
Michaelina Yohannis, University of Nairobi, Kenya

Network Densification Strategies for Automatic Weather Stations: Challenges and Opportunities for Uganda
Mary Nsabagwa, Makerere University, Uganda

16:00 Session 8d: Cyber Security I

Chair: Leulseged Alemie, Ministry of Communications and Information Technology, Ethiopia

Cybersecurity Governance: How can we measure it?
Rossouw de Bruin, University of Johannesburg, South Africa

Information Security Management in Local Government
Joshua de Lange, Nelson Mandela Metropolitan University, South Africa

Suppression of Cyber-defences
Brett van Niekerk, University of KwaZulu-Natal and Transnet, South Africa

Legislating on Law Enforcement Agencies' Access to Stored Data in the SADC Region - Balancing Harmonisation with Divergence
Lewis C. Bande, University of Malawi, Malawi

A Survey of Anti-Spam Mechanisms and Their Usage from a Regional Internet Registry's Perspective
Amreesh Phokeer, AFRINIC, Mauritius

16:00 Workshop 8e: Global Science Communities, that´s MAGIC!

Chair: Colleen Wint-Bond, Caribbean Knowledge and Learning Network Agency, Grenada

Session Introduction
Colleen Wint-Bond, Caribbean Knowledge and Learning Network Agency, Grenada

MAGIC Global Science Communities: A Global Approach in Scientific Endeavor
Tiwonge Msulira Banda, UbuntuNet Alliance, Malawi

Colaboratorio Demo: Enabling Global Collaboration
Tania Altamirano López, RedCLARA, Chile

17:30   End of Parallel Sessions

3 DAY

Friday,
May 13, 2016

09:00 Session 9a: ICT4D III

Chair: Marita Turpin, University of Pretoria, South Africa

The Impact of Improving Context-Aware Based Usability on User Acceptance and Sustainability of ICT4D Interventions
Felix Ntawanga, University of South Africa, South Africa

Sustainability of ICT4D Projects: Case Study of Mobile Cinemas in Rural South Africa
Henry Tinashe Manara, University of Pretoria, South Africa

A Comparative Analysis of Approaches to apply the Sustainable Livelihoods Framework to do Impact Assessment in ICT4D
Joan Mwenda, University of Pretoria, South Africa

Development of a First Version of a Maturity Matrix for ICT4D Knowledge Repositories
Melanie Platz, University of Koblenz Landau, Campus Landau, Germany

Process as an Element of UX in Collecting Indigenous Knowledge: A Case Study in South Africa
Gugu Khalala, CSIR, South Africa

09:00 Session 9b: eHealth IV

Chair: Darelle Van Greunen, Nelson Mandela Metropolitan University, South Africa

Privacy and Security issues for a Patient-centric Approach in Public Healthcare in a Resource Constrained Setting
Richard Pankomera, Nelson Mandela Metropolitan University, South Africa

The Extent to Which the POPI Act Makes Provision for Patient Privacy in Mobile Personal Health Record Systems
Munyaradzi C. Katurura, University of Fort Hare, South Africa

Mitigating the Elderly's Privacy Concerns When Making Use of Mobile Monitoring and Care systems
Liezel Cilliers, University of Fort Hare, South Africa

Critical Success Factors for eLearning Adoption in the Public Health Care Sector in South Africa
Nozibele Gcora, University of Fort Hare, South Africa

09:00 Session 9c: ICT4D

Chair: Ebenhezer Kauhonina, National Commission on Research, Science and Technology, Namibia

Spurring Innovation through Open Government Data for Africa
Ashwin Seegolam, National Computer Board, Mauritius

Challenges and Opportunities Faced by Micro-Entrepreneurs to Legally Screen Movies in Rural South Africa
Alta Van der Merwe, University of Pretoria, South Africa

Cloud Computing: Transforming Medium and High Tech Industries in Kenya
Pauline Wanjiku, United Nations Industrial Development Organization(UNIDO), Kenya

Towards the Effect of External Agencies on National Information and Communication Technology Policies Development in Developing Countries: Case of Africa
Gregory Kunyenje, University of Malawi, Malawi

Co-creation: Tourism, Technology and Wellness
Woudi von Solms, University of Mpumalanga, South Africa

09:00 Session 9d: Cyber Security II

Chair: Njei Check, National Agency for Information and Communication Technologies (ANTIC), Cameroon

Investigating the use of the South African National Identification Card for Electronic Transaction Processing
Dane Lang, University of Johannesburg, South Africa

Survey of Media Access Control address spoofing attacks detection and prevention techniques in Wireless Networks
Enos Letsoalo, Tshwane University of Technology, South Africa

A Generic Digital Forensic Readiness Model for BYOD using Honeypot Technology
Victor Rigworo Kebande, University of Pretoria, South Africa

09:00 Session 9e: eInfrastructure - NRENs

Chair: Tiwonge Msulira Banda, UbuntuNet Alliance, Malawi

The African Data Intensive Research Cloud
Robert Simmonds, Univeristy of Cape Town, South Africa

A Topology Visualisation Tool for National Research and Education Networks in Africa
Chantal Yang, University of Cape Town, South Africa

Efficient Topology Discovery for African NRENs
Josiah Chavula, University of Cape Town, South Africa

Devising NREN Design Goals from Commercial Network Design Guidelines
Kevin Draai, CSIR, South Africa

Context for the SA NREN Computer Security Incident Response Team
Roderick Mooi, Council for Scientific and Industrial Research, South Africa

10:30	Coffee Break

11:00 Session 10a: ICT4D IV - Rural Development

Chair: Jim Yonazi, Commission for Science and Technology (COSTECH), Tanzania

Hacking for Southern Africa: Collaborative Development of Hyperlocal Services for Marginalised Communities
Tatenda Chatikobo, Rhodes University , South Africa

Teleweaver: An Architectural Overview of a Customised Application Server for Rurality
Mosiuoa Tsietsi, Rhodes University, South Africa

Characteristics and Factors that discriminate Internet Users from Non-User Information Seekers: The Case of Rural Women in Tanzania
Edda Tandi Lwoga, Muhimbili University of Health and Allied Sciences, Tanzania

Towards an Integrated Framework for Rural Development in Kenya
Dorothy Apondi Rambim, Masinde Muliro University, Kenya

Technical Sustainability in Rural ICT Deployments in South Africa
Bethel Mutanga, Mangosuthu University, South Africa

11:00 Session 10b: eHealth V - Health Information Systems

Chair: Chipo Kanjo, University of Malawi, Chancellor College, Malawi

Management and Use of Health Information in Malawi and Burkina Faso: The Role of Technology
Patrick Chikumba, University of Malawi, Malawi

Improving Healthcare Delivery with the Use of Online Patient Information Management System
Oliver Lulembo, Information and Communications University, Zambia

Utilization of the District Health Information Software (DHIS) in Botswana: from Paper to Electronic Based System
Onalenna Seitio-Kgokgwe, Institute of Development Management, Botswana

11:00 Session 10c: eInclusion

Chair: Loi Namugenyi, Uganda National Council for Science & Technology, Uganda

Digital TV Accessibility - Analogue Switch off in Europe and Africa
Takebumi Itagaki, Brunel University London, United Kingdom

Women in ICT: Barriers to Career Advancement and Strategies for Improvement
Funmi Adebesin, University of Pretoria, South Africa

A Comparison of Project Management in System and Research Projects
Alta Van der Merwe, University of Pretoria, South Africa

Empowering Refugees and Migrants in South Africa through ICT4D
Kayan Leung, Lawyers for Human Rights, South Africa

11:00 Session 10d: Cyber Security III

Chair: Ashwin Seegolam, National Computer Board, Mauritius

Classification of Cyber Attacks in South Africa
Renier Pelser van Heerden, CSIR, South Africa

The Influence of National Culture on Information Security Culture
Sunthoshan Govender, UNISA, South Africa

Online Banking Users' Perceptions in South Africa: An Exploratory Empirical Study
Mathias Mujinga, University of South Africa, South Africa

A Framework for Enhancing Online Child Safety in Tanzania
Jim Yonazi, Commission for Science and Technology (COSTECH), Tanzania

Game-Based Enabled e-Learning Model for e-Safety Education
Sunday Ojo, Tshwane University of Technology, South Africa

11:00 Session 10e: eInfrastructure II

Chair: Phodiso Potesh Phole, Ministry of Transport and Communications, Botswana

IT Security Service Commoditization: The Case of Financial Institutions in Kenya
Lorna Mutegi, Strathmore University, Kenya

Supporting the Development of Biobanks in Low and Medium Income Countries
Akin Abayomi, University Stellenbosch/NHLS, South Africa

The Network Society: A Model for Computing Infrastructure in South African Schools
Alfredo Terzoli, Rhodes University, South Africa

12:30	Lunch

13:30 Closing Plenary 11: International Partnership Building

Chair: Paul Cunningham, IIMC, Ireland

Panelists confirmed to date include:
Mr Daan du Toit, Deputy Director-General, International Cooperation and Resources, Department of Science and Technology, South Africa

Morten Moller, Senior Advisor to European Commission, Belgium

Stéphane Hogan, Science Counsellor at the EU Delegation to the African Union, Ethiopia

Prof. Darelle van Greunen, School of ICT, Nelson Mandela Metropolitan University, South Africa

Dr Setumo Mohapi, CEO, State Information Technology Agency, South Africa

Mr Barlow Manilal, CEO, Technology Innovation Agency, South Africa

Mr Mpho Matsitse, Industry Value Advisor, ITA, South Africa

Closing Remarks
H.E. Naledi Pandor, Minister of Science and Technology, South Africa

IST-Africa Initiative

Founded in 2002, supported by the European Commission (EC) and African Union Commission (AUC) and co-funded under the EU Framework Programme since 2005, **IST-Africa** facilitates and supports:

• International Innovation, Research and Policy Cooperation
• Knowledge Sharing and Skills Transfer between IST-Africa Partners
• Collaborative Open Innovation, ICT, ICT4D, ICT Entrepreneurship and Social Entrepreneurship
• Africa – EU Strategic Partnership (Information Society, ICT, Innovation)

IST-Africa Activities include:

• Annual IST-Africa Week Hosted by IST-Africa Partner Governments
• Analysis of African ICT-related Research and Innovation Priorities
• Analysis of African Research and Innovation Capacity and Innovation Spaces
• Horizon 2020 Training Workshops to support Research and Innovation Capacity Building and promote awareness of Africa - EU Cooperation Opportunities
• Horizon 2020 Help Desk supports African - European Research Collaboration
• Participation in ICT, ICT4D and Innovation related International Cooperation Events

IST-Africa is a collaborative initiative between IIMC International Information Management Corporation Limited (Ireland, Coordinator), Department of Science and Technology (South Africa), Ministere de l'Enseignement Superieur et de la Recherche Scientifique (Burundi), Agence Nationale des Technologies de l'Information et de la Communication (Cameroon), Information Technology Industry Development Agency (Egypt), Ministry of Communication and Information Technology (Ethiopia), Ministry of Education, Science and Technology (Kenya), Ministry of Communications, Science and Technology (Lesotho), National Commission for Science and Technology (Malawi), National Computer Board (Mauritius), Instituto Nacional de Tecnologias de Informação e Comunicação (Mozambique), National Commission on Research, Science and Technology (Namibia), Ministère de l'Enseignement Supérieur et de la Recherche Scientifique (Senegal), Ministry of Information Communication Technology (Swaziland), Tanzania Commission for Science and Technology - COSTECH (Tanzania), Ministere de l'Enseignement Supérieur et de la Recherche Scientifique (Tunisia) and Uganda National Council for Science and Technology (Uganda).

Horizon 2020

Horizon 2020 commenced in January 2014 as the new Framework Programme to implement the Innovation Union with research and innovation funds of €80 billion from 2014 - 2020.

Horizon 2020 addresses all research and innovation funding that was previously provided through the Framework Programmes for Research and Technical Development (e.g. FP7), Competitiveness and Innovation Programme (CIP) and European Institute of Innovation and Technology.

Three main priorities include:

• Excellence Science – Research Infrastructures, Marie Curie (Mobility Grants), Future and Emerging Technologies
• Leadership in Enabling and Industrial Technologies (LEIT) – Components & Systems, Advanced Computing, Future Internet, Content Technologies and Information Management, Robotics, Micro and Nano-electronics and photonics
• Societal Challenges – Health, Food Security & Agriculture, Energy, Transport, Climate action and Environment, Innovation and Reflective Societies and Secure Societies

The Work Programmes for each thematic area for the period 2016– 2017 were published on 14 October 2015.

ICT is a horizontal activity that is included across a number of Work Programmes within LEIT as well as within Societal Challenges.

The **IST-Africa** Guide to 2016 Calls for Proposals within Horizon 2020 provides an easy-to-use overview of Open Calls, themes and deadlines within the 2016 – 2017 Work Programmes for Marie Curie, eInfrastructures, Leadership in Enabling and Industrial Technologies (LEIT - Components and Systems, Advanced Computing, Future Internet, Content Technologies and Information Management, Robotics and Key enabling Technologies (Micro-nano-electronics and photonics)) and Societal Challenges (Health, Food Security and Agriculture, Energy, Transport, Environment, Inclusive and Reflective Societies, Secure Societies)

The **IST-Africa** Introduction to Horizon 2020 is designed to support newcomers to Horizon 2020 to better understand the structure, rules and expectations

Please visit

www.ist-africa.org/home/default.asp?page=horizon2020

to download the individual Work Programmes, IST-Africa Guide to 2016 Calls for Proposals and IST-Africa Introduction to Horizon 2020