Arab Republic of Egypt
**Ministry of Communications
and Information Technology**
www.mcit.gov.eg

EGYPT'S ICT Strategy
2007-2010

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Introduction

Information and communications technology (ICT) amplifies human ability for the benefit of the economy and the community. Increasingly present in all forms of human activity, ICT is fundamental to the progress of society. Governments around the world are becoming increasingly aware of the strategic value of ICT in economic development. The Government of Egypt (GoE) recognizes the ICT sector as a critical component of the national economy, not only due to its substantial contribution to employment, exports and diversification of the economy, but for its dynamic and innovative potential, and its broader role in providing enabling technologies, products and services that underpin the development of Egypt as a knowledge economy in the global market.

Egypt has successfully mainstreamed ICT as part of its national development strategy over the last decade. The government formulated an ICT Master Plan in 2000 to ensure the effective deployment and use of ICT for the benefit of citizens and enterprises. Comprehensive assessment and review mechanisms were established to analyze the policy challenges and opportunities of ICT for the information economy. This process allowed the country to identify critical success factors and best practices, as well as impediments, in order to adjust and update ICT policies.

Egypt's telecommunications infrastructure has increased dramatically over the last decade. Fixed telephone lines have shown a steady increase, from 7.5 million in 2000 to almost 11 million in 2007. At the end of 2001, two private mobile operators were servicing 3.4 million mobile users. By the first quarter of 2007, this figure had increased to over 16 million, and a third mobile operator was awarded a license in 2006. The ICT sector has sustained double-digit growth and continues to be one of the fastest growing sectors in the economy.

The Egyptian Information Society Initiative has made great progress in the modernization of ICT infrastructure over the past five years. Solid foundations have been laid for continuing development at a rate Egyptian society can adapt to, gradually closing the digital divide for Egypt's industries, people and culture to allow the country to move forward as a whole. This, in turn, allowed the establishment of a solid education base that provides all Egyptians with the opportunity to adapt and use ICT developments for themselves.

Emphasis is placed on continuing research and development in the application of ICT in industries to allow Egypt to become and remain a world-class competitor. Progress is seen as no longer

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dependent on natural resources but rather on creativity and innovation. Research and Development Centers of Excellence have been established to provide an enhanced environment for Egyptian researchers. Each acts as a consortium bringing together professionals, private sector entities and educational establishments for the development of ICT.

Significant efforts have also been made to facilitate access to the Internet and related services in order to allow entrepreneurs and markets to fulfill their potential. The government's e-access policy seeks to harness the power of ICT in the development of traditional and older industries in Egypt. Companies must be assisted in maximizing their output potential through ICT to increase their competitiveness and create new employment opportunities. Another focus is reaching out to the poorer, rural areas of the country, where ICT furthers the objectives of capacity building in the community. In this context, IT Clubs, of which there are now over 1,500 nationwide managed by partnering local NGOs, continue to be successful as educational and ICT access centers in outlying areas, particularly for women.

MCIT is a keen supporter of capacity-building programs leading Egypt across the digital divide. A wide spectrum of programs has been developed, ranging from basic ICT literacy to advanced and specialized training. These programs have served more than 100,000 people of various skill levels to address market needs.

The promotion of ICT literacy and an entrepreneurial culture, particularly to young people and in academic circles, is essential for the sustainable development of the Egyptian ICT environment. With this in mind, MCIT launched the Egyptian Educational Initiative (EEI), through which it has established infrastructure in 2,000 K-12 schools, upgraded that of the Egyptian universities network and also provided high-speed connectivity to many of these institutions. The initiative has also addressed issues of capacity building for in-service professionals and those under training in aspects of utilizing ICT for education and content development. The capacity-building programs have benefited more than 80,000 trainees at different levels.

With the increase in utilization of ICT within the Egyptian economy, there has been significant growth in the number of Egyptians employed in ICT by both ICT and non-ICT firms. The growth in employment in the Egyptian ICT sector has outstripped the national average, indicating Egypt's increasing contribution to the knowledge economy. This has resulted in a significant increase in national ICT capabilities, especially in the areas of software and IT services development and export, as well as research and development.

Introduction

The government recognizes that an open, market-oriented and stable economic environment is necessary in order to build a knowledge-based society. Yet it also sees that economic reforms must be accompanied by a focused and concerted effort that combines the imaginative use of emerging technologies with creative public-private partnerships and multi-stakeholder partnerships to accelerate development. The government maintains a strong and cooperative relationship with multinational ICT companies, and this partnering has seen a catalogue of successes, particularly in the implementation of e-access and innovation programs. Indeed, the ICT sector in Egypt has become a model of success in the use of public-private partnerships, and the GoE remains committed to the use of partnering as a foundation for development.

Working practices and cultures are changing worldwide as ICT technology alters the way we work. Societies need to address issues such as privacy, security and protection of intellectual property, and to face new challenges such as cyber-crime. Adaptable regulatory policies are thus essential, both to cater to a changing market environment and to address the new challenges at this stage of Egypt's development. Yet in all aspects of development, the government is aware that it must build public confidence in the benefits available for all, such as those offered by new e-government services.

Egypt aims at building an export strategy based on competitiveness, which will attract foreign direct investment (FDI) and allow it to act as a regional hub. A study carried out in 2005 by US management consultant firm A.T. Kearney positioned Egypt number 12 on the global level in terms of competitiveness in outsourced services. This ranking is based on ICT infrastructure, government support, training programs available and the country's multilingual workforce. Moreover, private sector initiatives are actively encouraged, and the government is maintaining its commitment to provide continued investment in human resources.

One of the principal areas of industry development for the government is creating a framework that will attract multinationals to Egypt, and foster the growth of new ICT industries such as contact centers. A parallel objective is to improve the international competitiveness of existing

exporters and companies with export potential to enable them to successfully manage market-led development, production and sales of products and services suited to target segments of selected export markets. Ultimately, this should result in improved export capability, penetration of new markets and increased market share in existing export markets. During the last seven years, LE 30 billion has been invested in ICT companies, and the industry has witnessed growth of 700 percent.

Egypt's 2010 ICT Strategy consolidates and builds on the progress made to date by the government in partnership with the private sector and civil society. For Egypt, with its unique location at the crossroads of Europe, Africa and the Middle East, and a young population with diverse skills and economic potential, ICT is one of the key drivers of economic development and growth. In the coming pages we share with you our vision for restructuring Egypt's ICT sector, maximizing the benefits of ICT for development, and nurturing innovation to support industry development, while creating partnerships locally, regionally and globally. Our main priorities are:

- To continue development of state-of-the-art ICT infrastructure that provides an enabling environment for government and businesses throughout Egypt and links it globally
- To create a vibrant and export-oriented ICT industry
- To leverage public-private partnerships as an implementation mechanism whenever possible
- To enable society to absorb and benefit from expanding sources of information
- To create a learning community whose members have access to all the resources and information they require regardless of gender and location, thus allowing all to achieve their full potential and play a part in the country's socioeconomic development
- To support the development of the skills required by the ICT industry
- To support research and innovation in the field of ICT

MCIT is working on achieving its goals through three main tracks:

1. ICT Sector Restructuring

Reform measures undertaken by the GoE have played a key role in improving the outlook for local and foreign investment, as well as instigating and sustaining high levels of growth and employment creation. A policy framework promoting open markets, competition and public-private partnership was successfully put in place to enhance overall efficiency and lay the foundation for the implementation of several related programs and policies. The sound institutional framework that is already in place will bring more deregulation over the years ahead to the benefit of all stakeholders, especially consumers and investors. Strategies to improve regional and international connectivity, foster deployment of broadband technologies, promote convergence services and address cyber security will complement what has been achieved so far. Analysis has shown that the Egyptian postal market is performing below potential. The government therefore decided to launch a comprehensive program for postal reform and modernization. The program aims at raising the level of postal services offered to all citizens, increasing private sector investment in the postal market and creating a new export-oriented postal service industry in Egypt. This ambitious reform program, being prepared in collaboration with relevant international organizations, will include the creation of an enabling institutional framework in order to facilitate the development of effective postal regulatory policies, laws and functions.

Egypt's proactive ICT-related investment policies include both financial and non-financial incentives. The establishment of an institutional and legal framework that protects intellectual property rights enabled the country to attract more FDI over the past few years. This trend is expected to continue, and additional innovative incentives will be introduced.

The GoE is resolved to continue its efforts to maintain regulatory policies that make Egypt an attractive investment destination. The successful establishment of the National Telecommunication Regulatory Authority (NTRA) set the foundation for extensive deregulation. Privatization is also encouraging freer markets and introducing new opportunities, the initial public offering (IPO) of Telecom Egypt in 2005 is a case in point. In line with Egypt's commitments to the World Trade Organization (WTO) there have also been huge reductions in customs tariffs for ICT products. However, building world-class industry in Egypt will not, as is often the case with the modernization of industry, lead to the downsizing and streamlining of companies. It will rather create new employment opportunities, as expansion of the workforce is being achieved through the creation of new and larger markets and capacity building.

2. ICT for Development

In today's ICT-driven economy, it is not only the technical dimensions of ICT that need to be considered but the social aspects related to education, health, labor markets, intellectual content and other areas.

Egypt's ongoing strategy to increase e-access, implemented in partnership with the private sector, is providing easy and affordable access to ICT to an increasing segment of the population. The government has also facilitated the emergence of a network of IT Clubs in underserved areas, while new initiatives, such as Egypt PC 2010 – Nation Online, will further increase access and improve the quality of public services.

ICT capacity-building programs have received huge support from the government with a wide spectrum of programs ranging from basic ICT literacy to advanced and specialized training. There is a growing need to ensure that larger segments of the population participate in the digital economy, irrespective of their gender, if Egypt is to take full advantage of ICT. The government will therefore continue to support programs for digital literacy and specialized professional training. In addition, the Egyptian Education Initiative (EEI) will continue as a public-private partnership aimed at developing the skills needed for the knowledge society by enhancing the effective use of ICT at all levels of education and for lifelong learning.

The government has launched a series of e-health initiatives harnessing the power of technology to expand the delivery of medical care and diagnostic services throughout Egypt. The Telemedicine Network, the Health Informatics Programs and the Medical Emergency Call Center are successful technology-based programs that deliver improved healthcare and illustrate the importance of ICT as a tool for reaching underserved areas. Future steps will focus on deploying such programs nationwide as well as reducing the cost and increasing the efficiency of public health services.

Content industries worldwide are migrating to commercial digital applications with varying degrees of success. While games, music, scientific publishing and mobile content industries have very specific and different characteristics, digital content has become the major driver of growth in all these areas. Measures will be taken to ensure the continuing development of a world-class Arabic content industry through partnerships between the government, the private sector and civil society.

3. Innovation and ICT Industry Development

Technology is one of the main reasons for the growing importance of competitiveness. Since new technologies benefit all activities, rapid access to such technologies in the form of new products and knowledge is vital to Egypt's development. Competitive success in an innovation-driven global economy needs strong local capabilities, the development of which raises numerous market and institutional challenges. In Egypt, as in many other developing countries, the bulk of technological activity is in mastering imported technologies, adapting them to local conditions, improving them and finally using them as a base for creating new technologies. While the previous Egyptian ICT strategy focused on developing a world-class IT and communications infrastructure, its success necessitates a shift of emphasis to continuing research and development in the application of ICTs in traditional and new industries to allow the country to become and remain a world-class competitor.

The government's approach to ICT industry development is based on facilitating the establishment of effective and strategic partnerships in three key areas:

- Inter- and intra-industry partnerships that promote better linkages, alliances, networking and the formation of industry clusters to promote complementary business activity, knowledge sharing and joint ventures
- Partnerships between the education sector and the ICT industry to meet industry needs for expertise and to increase capacity for innovation and research
- Collaboration between the government and multinationals to promote greater cooperation in the planning and funding of ICT industry development and infrastructure initiatives

Regional and International Outreach

Egypt's ICT sector is open to the world. International cooperation has been an integral part of the activities of the ICT sector for decades. However, the scope and focus of such relations have witnessed an evolution in line with the development of the sector.

Egypt acknowledges with appreciation the support provided over the last two decades by international development partners such as USAID, the EU, the International Telecommunication Union (ITU) and UNDP among others, without which the telecommunications infrastructure we are proud of could not have been established. Not only was support provided for essential physical infrastructure, but also for the strategic policy framework that guided the development of the ICT sector.

For Egypt, with world-class ICT infrastructure in place, a geographic location at the crossroads of major global submarine cables, a policy and regulatory environment that nurtures competition, and sizeable local and regional markets, the focus of international cooperation in the ICT sector has matured to a new level.

New infrastructure requirements are now fully funded by the private sector. Regional and international investors are partnering with Egypt's ICT sector on the B2B as well as G2B levels to expand the market yet further. Egypt is actively engaged in global policy dialogues to shape the priorities of the knowledge society and address issues of common concern. We are now confident that Egypt's ICT sector has gained recognition as an effective peer in the international ICT community.

As we look ahead to 2010, our vision for international cooperation has three main components: to enhance the political positioning of Egypt's ICT sector globally in recognition of our role in bridging the digital divide; to increase opportunities for knowledge sharing and exchange of technical expertise, especially in the areas of ICT for development and innovation; and to maintain channels for policy-level dialogue in the widest sense possible.

To realize the vision, we will make use of existing regional and international cooperation mechanisms as well as explore and suggest new ones that add value. The current geographic scope of our activities covers the Euro-Med, Arab and African regions, as well as cooperation with North America and Asia. We will activate cooperation with Latin America in the coming period. We will also further develop cooperation with international development partners such the EU, the World Bank, UNDP and the ITU and will actively explore possible areas of cooperation with the Organization for Economic Cooperation and Development (OECD).

Egypt's commitment to engage with the EU in policy dialogue and knowledge sharing is serious. In this context, we will work to activate systematic channels for such cooperation with relevant European counterparts, particularly on the Euro-Med level. We have already dedicated resources and created the necessary institutional capacity to ensure the effective participation of Egypt's ICT sector in the EU's FP7 research program.

There is no doubt that the momentum created by the World Summit on the Information Society (WSIS) process nationally, regionally and globally is a valuable channel for multi-stakeholder interaction. Egypt will continue its active participation in follow-up mechanisms, including the Internet Governance Forum and the Global Alliance for ICT and Development. Our position is that the diagnosis and piloting phase is over. It is now time for rollout and implementation of projects. This will be the main focus of our work, especially on the Arab and African levels, in coordination with existing regional institutional structures, namely the League of Arab States and the African Union.

The challenges for Egypt's ICT sector are shared by many and the buzz words are repeated globally: cyber security, media convergence, multilingualism, responsiveness of the regulatory environment to new technologies, optimizing ICT for development, etc. We are now extending capable hands to partner with the world to tackle these issues.

ICT Sector Restructuring

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Overview

Since the late 1990s, the GoE has made deregulation and development of the telecommunications sector a priority. MCIT's sector development policy was translated into a comprehensive unified law, the Telecommunication Act, which was ratified by the Egyptian parliament in 2003. MCIT policy targeted establishing a sound institutional framework with an independent regulatory function and increasing the competitiveness of the Egyptian telecommunications market. MCIT aims to further empower the telecommunications sector through continued deregulation, ensuring that all stakeholders – citizens, government, operators and vendors – benefit throughout the process.

Since MCIT announced the first national ICT plan in 1999, it has recognized the importance of creating an environment conducive to the development of the ICT sector. MCIT has worked on creating an enabling framework over the last six years through a series of laws and regulations covering areas including telecommunications, e-signature and industry development. Yet, as ICT-empowered products and services quickly develop, this framework needs to be adjusted to turn these developments into feasible business opportunities that benefit all stakeholders. Among the most important of these developments is the convergence between information, media and telecommunications. MCIT aims to promote Egypt as an internationally recognized ICT hub for the Middle East and Africa, providing state-of-the-art converged services to its citizens and businesses and exporting convergence-enabled services to neighboring countries.

2.1 Development of State-of-the-Art Telecommunications Infrastructure and Export of Services

International experience has shown that state-of-the-art telecommunications infrastructure is crucial to the development of various economic activities in modern societies. Competition ensures the sustainability of infrastructure and the continuous enhancement of services to serve the needs of individuals and businesses. Looking forward, MCIT will continue to focus on promoting new and cutting-edge technologies that will assist overall socioeconomic development.

Objectives:

2.1.1 To integrate communication networks within global infrastructure

A. International Connectivity Program

MCIT will work with the NTRA, to set up a transparent and competitive framework to license new cable systems linking Egypt to strategic markets in the region and across the Mediterranean. The new framework will support the establishment of a secure, competitive and sustainable international bandwidth market in Egypt. It will also resolve the issue of bottlenecks in the submarine cable systems across the Mediterranean, thereby empowering the development of broadband services in the Middle East and Africa.

B. National Connectivity and Infrastructure Program

While satellite networks played a leading role in the development of Internet services in Egypt in the mid-1990s as the upstream backbone connection, their role has subsided since the turn of the century due to the increasing demand for bandwidth that can only be provided through fiber optics. Successive reductions in the cost of bandwidth delivered through fiber optics provided a much more attractive solution for establishing backbones and delivery of services throughout Egypt.

However, the need to take ICT services to rural areas where fiber-optic networks are impractical due to limited demand and rough terrain requires new solutions. Recent developments in satellite technology that have resulted in lower costs and higher throughputs now make it a more viable means to connect rural areas. Satellite systems can also increase the safety of air and maritime navigation by providing real-time digital channels connecting aircraft and ships with land-based monitoring stations.

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MCIT will cooperate with the NTRA in setting up an enabling framework for the provision of satellite services and clearing the spectrum needed for such services. MCIT will also cooperate with relevant stakeholders to promote investment for setting up and operating new satellite systems to provide rural connectivity and digital communications between aircraft, ships and land stations.

2.1.2 To provide state-of-the-art communication services throughout Egypt

A. To Foster Deployment of Broadband Technologies

Penetration of broadband services, as required for the delivery of government, social and educational services, has become a differentiating factor in assessing countries' ICT infrastructure development and overall attractiveness.

MCIT therefore aims to set up a new policy framework for the provision of broadband services making use of the developments in wireless communications, especially in the domain of High Speed Packet Access (HSPA) and WiMax technologies. The ministry will cooperate in this regard with the NTRA and relevant stakeholders to clear the spectrum needed for the provision of services and upgrade the licenses of existing operators, issuing new licenses if needed, to facilitate the provision of broadband technologies. In 2007, MCIT will fully implement its commitments under the WTO to abolish customs on ICT products, thereby reducing the capital costs of rolling out new wireless infrastructure by almost 30% compared to 2004 costs.

B. To Promote Converged Services

Convergence between media and ICT is becoming a global market trend driven by technological developments and consumer preferences. Development in digital technologies, especially those related to the web (Internet protocol communications, streaming and casting services, peer-to-peer applications, etc.), is creating de facto standards for both the media and telecommunications sectors. Providers in various countries have found that integrated packages of Internet, telephony, media and entertainment services best suit customer preferences. Moreover, provision of such integrated services over a single high-speed platform significantly reduces provision costs and allows for more efficient utilization of infrastructure. Such economies of scale reflect in better returns on investment in infrastructure projects and hence provide an incentive for wide-scale deployment of broadband infrastructure.

MCIT will be working with Ministry of Mass Media and all relevant stakeholders to create an enabling environment for converged services. Building on its experience in creating enabling frameworks that

foster cooperation between various stakeholders (government, consumers, operators and service providers), MCIT will promote converged services by:

- Creating new models for cooperation between content developers, integrators and providers to serve domestic and international markets
- Amending the licenses of existing carriers and service providers, or issuing new licenses if needed, to enable provision of converged services
- Encouraging investment in the rollout of high-speed infrastructure throughout Egypt and linking Egypt to the world
- Enforcing laws and regulations protecting the intellectual property rights of content owners in cyber space

Egypt is in a position to become a regional leader and offer all forms of converged services such as:
- Media-mobile convergence through mobile TV services expected to become available in 2007 with the launch of 3G services
- Media-telecom convergence in 2007-08 through various forms of IP-TV via ISPs building on the successful services offered during World Cup 2006
- Fixed-mobile convergence during 2007-08 as strategic partnerships are developed between mobile, data and fixed operators

C. Fixed and Mobile Operators Licensing Program

i. 3G Licenses for Mobile and Fixed Users

In Q2 2006, the NTRA granted the first license to provide 3G services and the third mobile license in Egypt to a consortium led by Etisalat of the UAE for US$ 3 billion. In Q1 2007, the NTRA granted a similar 3G license to the second mobile operator, led by Vodafone of the UK, for US$ 560 million. These sums reflect the interest of international operators in the Egyptian 3G market and the potential of broadband development through 3G services.

By Q2 2007, the majority of mobile users in Egypt will be enjoying 3.5G services based on HSPA technology offering speeds surpassing that of conventional ADSL services through mobile operators with 3G licenses. Additionally, Telecom Egypt will be offering CDMA 1X EVDO to customers of CDMA services in rural areas with speeds comparable to those of ADSL services.

It is expected that by the end of 2010 high-speed Internet access will be available across the entire country.

ii. WiMax Services

Egypt is following closely the efforts to standardize WiMax technologies as they permit simpler and faster access to Internet services, especially as WiMax receivers are integrated into PC processors. Field trials have been set up in Cairo, Giza, Luxor and Aswan by leading international vendors and Egyptian operators on a non-commercial basis to assess the suitability of these technologies for Egypt's environmental and topographical conditions.

With WiMax standardization expected to be complete by 2007-08, MCIT will cooperate with the NTRA and current WiMax users to clear the spectrum as necessary. The ministry will also hold discussions with relevant stakeholders to determine the best policy framework for introducing WiMax into the market through existing or new operators.

iii. Licensing of a Second National Operator for Voice and Transport Services

Following completion of the tariff rebalancing process, Egypt's fixed-line telecommunications market will be ready for the introduction of alternative carriers. MCIT is planning to start the process for licensing a second national operator for voice and transport services by 2008-09, with a view to this company starting operations in 2009. MCIT will make sure that the new operator contributes positively to the overall growth of the telecommunications sector by offering world-class services to other carriers as an alternative core network, as well as to business and residential users.

iv. Framework for Cooperation in the Rollout of Alternative Network Infrastructure

As the framework for converged services outlined below becomes a reality, alternative networks may be required. The ownership structure of such networks, their coverage, technologies and the services they will deliver thus need to be discussed by various stakeholders.

Among the networks likely to be used are the fiber-optic networks owned by gas and electricity companies, while there is also the possibility of making use of the right-of-way of railroads to roll out new national cable infrastructure. These networks might be complemented by hybrid networks of power-line communications, co-axial cables or wireless solutions to reach end-users. Using high-speed packet technologies, the new network infrastructure could be utilized for the delivery of a wide array of Internet, telephony and entertainment services.

MCIT and the NTRA will be leading a national dialogue among all stakeholders about the various options for fostering the development of such alternative networks in a competitive and transparent manner that would benefit all market participants.

2.1.3 To develop exports of communications services by establishing a Telecommunications Free Zone

As Egypt develops its connectivity within the region and through submarine cables to Europe and Asia, it will be increasingly well suited to function as an exchange point for international traffic flowing between these highly active regions. Also, through its growing customer care and content industries, it will be in a position to provide attractive offerings to international carriers. MCIT intends to establish an industry for value-added services for transit traffic by setting up a telecommunications free zone where transit telecommunication services are provided to serve international markets.

MCIT will be cooperating with the ministries of finance and investment and other relevant organizations to promote the establishment of this free zone by offering an attractive package of incentives for international and local carriers to serve regional markets.

A. International transient voice relay

As Egyptian operators are successfully establishing operations throughout the Middle East, Africa and southern Mediterranean region, and as Middle Eastern operators move in the Egyptian market, the need arises for a flexible framework for exchange of regional traffic (especially that not originating or terminating in Egypt) making use of the excellent connectivity that links Egypt to almost all Middle Eastern and African countries. Companies located in Egypt's telecommunications free zone would be in an ideal position to aggregate traffic and thus run the most efficient routes to various countries in the region and beyond.

B. Establishment of regional Internet exchanges

The Middle East and Africa region has one of the world's highest growth rates in Internet penetration. Deregulation in major Middle Eastern markets is making broadband communications more affordable and is creating more demand for Internet bandwidth. At the same time, the direction of traffic is shifting; while the majority of traffic previously came from Europe and the US to regional markets, it is now becoming more balanced as intra-regional traffic grows with the use of peer-to-peer applications. However, due to the nature of connectivity between Middle Eastern and African markets and European and American hubs, traffic needs to be exchanged in Europe and the US, consuming international bandwidth.

As Egypt promotes converged services by offering Arabic content online, it would be well positioned to offer Arabic content to other countries in the region, especially as it increases its direct links to Arab markets. This would allow for the establishment of regional exchanges serving Arab carriers and data centers, thus creating a critical mass that would attract foreign carriers to exchange their traffic with regional carriers. This would bring down the costs of international bandwidth for Egyptian carriers and eventually for Egyptian consumers, and also promote value-added and content services in Egypt.

2.2 Reform of the Postal Sector

The international postal sector has changed more in the last 20 years than in the previous century and a half, leading many governments in developed and developing countries to recognize the need for effective and sustainable postal reform. Significant forces have driven this transformation: changes in postal market demand and supply, globalization, market liberalization, regulatory progress and technological advances in all communications media. Among these changes, the most important is the increasing role of the private sector in the provision of postal services. Previously, public operators were chosen to meet this obligation and were provided with monopolies, not only to preserve the integrity of the mail, but also as an economic incentive to serve unprofitable areas of the mail market. Today, the level of private sector participation in the supply of postal services is significant and growing, resulting in a more competitive postal market and an increased need for effective regulation.

The GoE recognizes that a strong universal postal service operating within a competitive postal market can serve as a valuable tool in achieving national development objectives. Efficient postal services can reduce the cost of financial and other business transactions and thereby increase national competitiveness. Nationwide postal networks can also serve as effective agents in increasing public participation in civil and economic life, reducing rural isolation and marginalization, and in distributing government benefits and services more equitably. When these networks also incorporate comprehensive financial services, they can stimulate national capital accumulation, include wider segments of society in formal financial channels and serve as a catalyst for the growth of SMEs.

However, recent analysis has shown that the postal market in Egypt is performing below potential and not fully meeting the needs of individual and business mailers. This is demonstrated by the low per capita level of mail in Egypt (3.2 pieces per person annually) in comparison with countries immediately above (5.8 pieces) and immediately below Egypt (5.0 pieces) in terms of GDP per inhabitant (PPP method). MCIT is therefore determined to undertake a program of postal reform and modernization to define and realize its future vision of the postal sector in Egypt by 2010.

Objectives:

2.2.1 To develop a world-class postal service in terms of quality, innovation and accessibility

A. Development of a State-of-the-Art Postal Network

A comprehensive postal network can serve as an effective agent to increase access to information that is the key to strengthening levels of participation in civil and economic life. This is particularly true in rural and isolated areas that have little access to other government or private services. Postal retail outlets can serve as "portals" to government services – including registration, licenses, tax documents, etc. Postal networks are also positioned at the center of three critical business flows: information, goods

and cash. In many countries, this unique positioning has been used to move towards a "business communications center" concept for post offices that adds value to the postal network and reduces the cost of maintaining a universal service network.

The communications center concept has also been used to develop "hybrid mail" and other innovative mail products that synergize digital and physical communications media.

B. Supporting Restructuring and Modernization of Egypt Post

While the evolution of the postal sector in industrialized countries was characterized by liberalization, best practices show that liberalization needs to be accompanied by enhancement of public operators' efficiency and effectiveness. This can be achieved by extending the reach and portfolio of services offered by public operators to reflect industry changes and economic development. Extensive integration of ICT in the operations of national operators and the services they provide has a positive effect on restructuring.

MCIT views the modernization of Egypt Post as a fundamental component of its strategy to develop the sector since it will continue playing the role of universal service provider until such time as alternatives emerge. Making use of Egypt Post's wide outreach, extensive network and the public confidence it has built over the years, its service offerings can be further extended to include governmental, societal and financial services in addition to traditional postal services.

MCIT will facilitate collaboration between Egypt Post and relevant governmental and business institutions to develop postal services, products and systems that support e-government and e-commerce as well as new and innovative products that combine digital/physical communications systems.

MCIT will also continue to encourage Egypt Post to form partnerships to further empower its human and capital infrastructure and enable it to offer new products and services making use of and serving the ICT industry. This will result in the development of systems for sorting, tracing, addressing and customer care – all crucial components of any modern postal infrastructure. Use of postal networks to manage global supply chains and enhance delivery of e-commerce is another area that could be beneficial to the development of the ICT sector in Egypt.

2.2.2 To increase overall levels of private sector investment in the postal market through open and fair competition and progressive regulation

Utilization of the private sector as a catalyst for development has been a cornerstone of the strategies of MCIT since 1999. Currently, the private sector accounts for a significant portion of the supply of postal services in Egypt, even though much of this activity is unlicensed. ENPO has also utilized private sector individuals and businesses to extend its universal service network and in partnerships for high-value products. Through arrangements in areas such as courier services and transportation, ENPO has also demonstrated the potential of public-private sector partnerships. With proper regulation and market definition, and resulting market growth, private sector participation could be increased significantly.

Furthermore, as the Egyptian economy grows and as mail-heavy industries such as financial services and utilities expand, there will be an increasing need for an efficient postal network to handle advertising, bill delivery and payment, and goods and cash transfers. There are demonstrated cases where effective postal sector policies and reform have led to significant increases in the level of such partnerships and in the level of private sector investment in public postal services (financial services, FDI in equity, management contracts).

MCIT recognizes the need to stimulate innovation in the postal market to respond to the unmet and emerging needs of customers for new and innovative postal products. Hence, MCIT will be working on a set of incentives to encourage the participation of the private sector in projects that could stimulate further progress in various areas. At the same time, an independent regulatory mechanism will be in place to monitor ongoing growth and innovation in the Egyptian postal market and benchmark this progress against international standards.

A. Establishment of a Neutral Regulatory Mechanism

The Egyptian postal market has a high level of competition with 12 operators providing various forms of postal services. However, it does not have effective regulatory oversight, as the Egyptian National Postal Organization (ENPO), the entity entitled by law to issue licenses to postal operators, is itself in the market competing with other operators directly or indirectly (through subsidiaries or joint ventures). Moreover, some of these operators offer services beyond the scope of their licenses while others function without licenses.

A recent study by the Universal Postal Union (UPU) argues that this market structure has resulted in fragmentation of postal networks and mail flows that reduces potential economies of scale and limits service quality and innovation. The UPU study concludes that the postal market in Egypt is performing below capacity and that there is room for expansion and additional private sector investment However, the significant lack of transparency concerning the separation between the regulatory and operator

functions of ENPO has affected the predictability of the sector and thus the level of private sector investment. Moreover, there are no regulations concerning fulfillment of universal service obligations or an effective licensing regime to legitimize competition in the market.

MCIT will thus be working with ENPO, postal operators and other stakeholders over 2007-08 to:

- Develop effective postal regulatory policy, laws, regulations and functions that stimulate competition for the provision of postal services, promote private sector investment, maintain adequate universal postal services, and prepare the postal sector for future international regulatory and technological developments
- Identify respective roles and responsibilities of the policy, regulatory and operator functions for the postal sector
- Establish an independent postal regulator function to ensure the effectiveness and integrity of the regulatory process and maintain a competitive market space

B. Adapting to New International Postal Regulations

Globalization of national economies and liberalization of marketplaces have influenced the supply side of postal markets more significantly than the demand side by allowing both official and private postal operators to expand their operations across national boundaries into regional and global markets. International regulatory advances (e.g. the WTO's General Agreement for Trade in Services – GATS) are rapidly reducing or eliminating trade and competitive barriers, creating new opportunities for market entry.

The UPU is moving towards a quality- and cost-based terminal dues system. As ENPO's inbound and outbound international letter mail flows are more or less equal to its domestic flows, this market segment and the economic viability of both public and private operators might be significantly impacted by such changes. As part of the reviewed proposal under the GATS Doha round presented in 2006, Egypt proposed liberalization of courier services starting from 2009. Thus, postal laws in Egypt need to be developed to allow for liberalization of services and to comply with international trade regimes. Regulatory reforms will need to be introduced to prepare the postal sector for future changes in international postal regulatory regimes required by GATS and the UPU.

TURING

2.2.3 To create a new export-oriented postal industry in Egypt

A. Establishing Egypt as a Postal Hub

As the size of regional trade increases, primarily due to e-commerce, there will be an increasing need for hubs that manage supply chains on a regional level. Such hubs will be characterized by intermediate geographic position, efficient operations supported by strong ICT infrastructure as well as a flexible and enabling framework. Postal services in high-growth countries demonstrate the value of postal networks in strengthening import and export channels. Through a unique arrangement with customs counterparts, postal operators have been able to increase import and export flows and provide support for the growth of SMEs and other businesses.

B. Cooperating with International Operators through a Postal Free Zone

MCIT will be facilitating cooperation between governmental agencies responsible for transport and trade (aviation, transport, finance and investment), the Customs Authority, Egypt Post, private operators and other stakeholders to create the first postal free zone in the region. It is expected that this move will entail the development of the current regulatory frameworks governing establishment and operations of free zones to match those of prominent regional and international free zones. It will also involve the establishment of new infrastructure and supply systems connected to global and regional markets and the re-engineering and rationalization of relevant processes and inspection mechanisms to facilitate transactions and promote business.

This strategy to build an export-oriented industry, improve the competitiveness of the Egyptian economy and generate employment will be facilitated through the cooperation of active regional and international operators. MCIT will therefore cooperate with the General Authority for Investment and Free Zones (GAFI) and other relevant agencies to promote Egypt's postal free zone to international postal and supply-chain operators as a regional hub and logistics center, building on its successful experience with multinational telecom and IT companies.

2.3 Enhancing the Framework Governing Use of ICT Networks and Services

Egypt recognizes the importance of integration within the international ICT framework as a means to achieve its goals for the Egyptian ICT sector. Thus, while Egypt was developing its original framework governing the ICT sector in 1999, active participation in international ICT forums and adoption of relevant agreements were priorities. Egypt has maintained this strategy throughout its various phases of ICT development and will continue to do so during the next phase.

Another focus of Egypt's ICT sector development plans is the need to ensure continuous, affordable and secure delivery of ICT services to all members of society. This need is in fact growing due to the increase in use of ICT in mission-critical applications by all sectors of society.

Objectives:

2.3.1 To integrate Egypt within international frameworks governing trade in ICT

A. Active Integration into the Global ICT Market

Globalization holds benefits for economies that manage to create the right framework to make use of its merits while avoiding its shortcomings. Egypt has chosen to undertake this challenge as a means to promoting exports and attracting investment and has demonstrated this commitment through a number of international and regional trade agreements. These commitments are meant to ensure predictability in governing the sector and assure local and foreign investors of the intention of Egypt to integrate into the world trading system.

B. Trade Agreements

During the development of the original Telecommunications Act in 2000, MCIT focused on the principles of independence, transparency, non-differentiation between companies based on the nationality of their founders and fair competition as bases for governing sector performance. Egypt joined the WTO agreement governing trade in telecommunications services (Basic Telecommunications Agreement) in June 2002.

Looking ahead, and in order to promote competition in other sectors of the ICT industry, MCIT has proposed commitments under the current round of negotiations in services regarding trade in computer-related services (CRS) and courier services.

There is considerable potential for Egyptian operators in regional markets in the areas of call centers, content and value-added services. MCIT will therefore cooperate with the

Ministries of Trade and Industry as well as Foreign Affairs in the ongoing process of developing the GAFTA agreement on services to ensure that it reflects the expectations of operators.

EU Association Agreement: The EuroMed free trade area foresees free trade in goods by 2010 including activation of Agadir agreement between Egypt, Jordan, Tunisia and Morocco. Cooperation in ICT is essential for an integrated EuroMed region including enabling growth of intraregional trade in services and promotion of research.

2.3.2 To enact programs to ensure equitable access to telecommunications services throughout Egypt.

A universal services fund (USF) was established by the NTRA in 2003 to support provision of access to basic telecommunications services throughout Egypt. The fund received LE 50 million from the surplus of the NTRA's 2005 budget to support emergency and rural communications in five governorates. Expanding effective use of the fund will be the focus of the coming phase.

2.3.3 To protect users' privacy in the information society and fight cyber-crime and harmful content.

The Egyptian government, in cooperation with the private sector, has initiated actions to prevent, detect and respond to cyber-crime and misuse of ICTs. These measures include developing legislation regarding investigation and prosecution for misuse; promoting effective mutual assistance efforts; strengthening institutional support at the international level for preventing, detecting and recovering from such incidents; and encouraging education and raising awareness. In addition, the government has begun to raise awareness among users, both corporate users and individuals, about the appropriate use of ICTs and the penalties for violations.

Maximizing Economic Gains from the Liberalization Process

A recent study undertaken by the World Bank was able to quantify the direct impact of the development of telecommunications on GDP growth. The Egyptian experience with the process of deregulation shows that through careful planning and with a transparent licensing framework, all stakeholders can benefit from the deregulation process. Moreover, the telecommunications sector has proven itself to be a primary driver of the Egyptian stock market, expanding the pool of beneficiaries of the telecommunication sector even further. MCIT's strategy is to work on maximizing the positive contribution of the ICT sector to the overall economy. This can be achieved through increased revenues from licensing proceeds and taxes from the ICT sector to the benefit of the national treasury whether as considerable one-time or sustainable annual fees. In addition attracting new long-term national and foreign direct investment in large ICT projects and promoting the expansion of Egyptian operators into high-potential and strategic markets will significantly contribute to growth.

ICT for Development

Overview

The revolution in information, knowledge and technology heralds a new economic and social order characterized by the development and exploitation of ICT within all spheres of human endeavor. This era is giving rise to the emergence of information- and knowledge-based economies with traditional economic, industrial and commercial activities moving towards a knowledge-driven process with most of the advanced economies progressively transforming into knowledge-based, technology-driven, services-dominated economies.

These economies are increasingly laying emphasis on economic activities with intellectual content and knowledge. A number of countries are recognizing the need to rapidly develop their knowledge base through massive investment in human resource development, laying emphasis on improving and broadening universal access to higher and quality education and training, including on-the-job and in-service skill updates and lifelong learning, and creating e-content in their own language on the web.

The use of these emerging technologies to transform government machineries to facilitate efficiency in operations and service delivery is likewise a focus of many governments. Indeed, governments worldwide now recognize the crucial role that ICT can play in facilitating and accelerating socioeconomic development. A number of countries in both the developed and developing world have in place relevant policies and strategic plans that will enable them to transform their economies into information- and knowledge-based economies. Egypt, like other developing countries, seeks to take advantage of ICT to facilitate socioeconomic development and speed up the process of making the nation's economy and society information-rich and knowledge-based.

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Mapping people's requirements with respect to e-access, education, health, e-content and government services, which are essential for Egypt's socioeconomic development, MCIT's 2007-10 ICT strategy reflects its commitment to using information technology to further sustainable human development and build an information society capable of capitalizing on the emerging knowledge revolution.

A feature of all these efforts has been the development of partnerships in addressing the challenges raised by ICT, including collaboration between the public and private sectors and civil society. This is exemplified in the development of a national action plan for ICT in education covering all sectors of education, e-content development and ICT use for socioeconomic development.

While programs such as IT Clubs have supported the extension of community technology centers across Egypt, they are expected to address fully the needs of adults lacking ICT skills and digital literacy. Complemented by programs such as Egypt PC 2010, Free Internet and others to increase broadband accessibility, these initiatives have extended the impact of capacity-building programs.

A highlight of MCIT's efforts towards promoting ICT for development was its establishment, in partnership with the UNDP, of the Egypt ICT Trust Fund. The fund is a mechanism to promote ICT as a means to attain socioeconomic development. It also aims to raise the awareness of the developmental potential of ICT, while helping make it more accessible to Egyptian citizens. Through a select group of programs the Trust Fund has served communities across Egypt, increasing awareness and utilization of ICT in development. These programs include the Mobile IT Club, the KenanaOnline developmental portal and the utilization of ICT in eradicating illiteracy.

3.1 ICT for All

Seeking to guarantee universal, easy, affordable and rapid access for all Egyptian citizens to ICT, and stimulating awareness of the potential uses and benefits of this technology, MCIT has implemented a number of programs promoting computer literacy and encouraging increased public use of ICT.

Among the major programs to support these goals is Egypt PC 2010 – Nation Online, the successor to PC for Every Home – which aims to increase PC penetration within households and the academic sector. These programs have been successful in increasing PC penetration in Egypt to 7%. MCIT has also facilitated the emergence of an IT Clubs network across Egypt providing citizens with access to IT, with the focus on rural and underprivileged areas. The network currently comprises over 1,500 IT Clubs. Additionally, Egypt Post's national network provided MCIT with a ready established network of outlets for the delivery of e-government and other public services.

Egypt's Free Internet initiative and broadband connectivity programs have helped increase accessibility to the Internet and made connectivity affordable to most citizens. As a result, the number of Internet users in the country has risen to over 5 million.

Through an ambitious and aggressive program, MCIT has supported the increase of ICT skills across Egypt. Basic ICT literacy training courses have been completed by over 100,000 people and the program has enabled many Egyptians to receive recognized international certificates verifying their computer skills.

Objectives:

3.1.1 To assist the GoE in its policy to integrate ICT in government and public services

A. Increasing ICT penetration in Egypt to help realize the full potential of the knowledge society

B. Fostering inclusion and better public services and quality of life through the use of ICT and access to knowledge for all

C. Extending the use of post offices in providing public services

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3.1.2 To facilitate ICT access for all Egyptian citizens

A. Increasing PC penetration through the Egypt PC 2010 – Nation Online initiative
B. Extending the reach of Internet connectivity and broadband to all communities
C. Raising the employability of youth through ICT training and encouraging government employees and the general public to attain international accreditation in ICT skills

3.2 ICT for Education and Lifelong Learning

Aware of the vital importance of education as a driver of the economy, and a sector in which progress affects all others, the GoE has long made educational reform a priority, as demonstrated by the almost one-third of government spending that it receives. A major component of this reform is the utilization of technology in education, the primary motivation for which is the firm belief that it will stimulate student-based learning. Working closely with the Ministry of Education and Ministry of Higher Education, MCIT is strategically planning for best utilization of ICT in education through a number of projects, the most notable of which is the Egyptian Education Initiative (EEI).

The Egyptian education system has progressed through several phases of development as ICT is incorporated. The initial rolling out phase focused on getting computers into institutions, limited professional development of teachers and software development. This was followed by pilot schemes to integrate ICT into the work of schools and educational institutions based on the overall strategic directions of these institutions. The current focus is on ensuring that policy for ICT in education is integrated with overall educational policy. This is particularly important as evidence suggests that practice in educational institutions remains a mixture of the old and the new, and that there has not yet been a significant transformation in the way learning occurs in these institutions and in society.

The Egyptian Education Initiative (EEI) is a public-private partnership between the GoE, the World Economic Forum's IT member community and various multinationals. The initiative supports Egypt's overall education reform efforts and maximizes the potential for collaborative partnership to achieve its goals. The main objectives of the EEI are:
- To improve the development and delivery of education for Egypt's citizens, thereby accelerating the implementation of educational reform
- To raise the quality and effectiveness of education and training in Egypt
- To develop the skills needed for the knowledge society
- To provide education and training to a wider sector of the populace
- To prepare all school and university students for the digital workforce by enhancing their creativity and that of their teachers through the effective use of ICT

- To leverage this environment of national government commitment and corporate citizenship to build a model of educational reform that can be exported and replicated throughout the Arab region

The EEI is divided into four tracks: pre-university, higher education, lifelong learning and ICT industry development.

The Pre-University Track aims to increase the capacity of education leaders to plan, implement and monitor policy-level decisions, as well as projects and programs, to enhance the educational process. It also seeks to provide e-training to teachers and school administrators to build their professional competencies in order for them to fully utilize ICT in the teaching, learning and school management processes. Additionally, the pre-univeristy track aims to improve the delivery of teaching material through a wide range of available technologies, leading to the development of 21st-century skills such as critical thinking and problem solving and a culture of teamwork. These targets are achieved through developing appropriate economic models for effective, sustainable integration of ICT in the education system, accelerating the deployment of high-quality infrastructure at a reasonable cost to increase accessibility in schools, and establishing a system for quality assurance and accreditation.

The Higher Education Track is designed to connect the higher education community as well as to assist in the introduction of e-learning in Egyptian universities, building capacity for e-content development and creating e-content for basic courses in English, IT, soft skills and entrepreneurship. In addition, this track aims to support management information and decision systems in academic and research institutions in order to enhance educational processes. These targets are achieved through supporting the ICT infrastructure in academic and research institutions, increasing accessibility for staff, students and administrators, and establishing a system for quality assurance and accreditation.

MCIT, in cooperation with the Ministry of Higher Education, is establishing e-learning labs in all Egyptian universities. The labs will be managed by highly trained professionals from reputable international corporations. MCIT has also installed 300 IT Clubs in Egyptian universities, and has modernized the Egyptian Universities and Research Network (EURN), connecting all universities and research centers to the Internet.

LifeLong Learning is an essential part of the MCIT training and education strategy. Through this component, MCIT aims to complete an assessment of existing Egyptian lifelong learning infrastructure and content, to develop e-learning content for lifelong learning and to implement a pilot project delivering localized content for lifelong learning. It also seeks to establish a connected learning community that creates educational experience and opportunities for 21st-century learners to realize their full potential. These targets are realized through assisting in the establishment of the infrastructure required for lifelong learning delivery channels.

The ICT industry development track complements the other three tracks by producing relevant professional certification for the ICT industry, thereby encouraging capacity building in the e-learning and e-content industry.

To this end, MCIT, in partnership with various multinationals, launched the Professional Training Program in 2000, which aims to build a pool of skilled Egyptian ICT graduates. The program focuses on engineering and computer science graduates, who are trained in the latest technologies and receive internationally recognized certification. So far, 35,000 students have successfully completed the program. A revision of the program was carried out in 2005 to ensure that the skills taught more closely match industry and market requirements.

Other notable MCIT projects to support the integration of ICT in training and education are the Smart Schools Network Program and ICT for Illiteracy Eradication. The Smart Schools Program aims to introduce new methods of pedagogy and administration in 38 preparatory schools across Egypt using ICT to raise educational standards and promote computer literacy. This program marks the first integrated move towards a comprehensive modernization plan for the Egyptian schooling system. It will later expand to cover 50 public schools and eventually become the standard model for experimental preparatory schools (grades 7 to 9) country-wide.

The ICT for Illiteracy Eradication program has produced electronic content for teaching Arabic letters and words and elementary mathematics based on the General Authority for Literacy and Adult Education (GALAE) curriculum for illiteracy eradication. The program has adopted a mixture of taught and self-study courses. MCIT has also established Training of Trainers programs in 15 governorates to serve growing demand for basic literacy training.

Objectives:

3.2.1 To help the GoE achieve its vision of education and lifelong learning as a driver for socioeconomic development

A. Optimizing investment in ICT and securing best value through use of economies of scale and research and development of new technologies to help find and sustain cost-effective methods for educational institutions to meet their computer/instructor ratios

B. Satisfying training requirements for industry-related capacity in ICT graduates

C. Setting up the required platforms for and continuing to promote lifelong learning

3.2.2 To integrate ICT within formal education at all levels and foster better management of education systems

A. Using ICT to increase the efficiency and effectiveness of the services offered by educational institutions by supporting educational institutions in meeting their computer/instructor ratios and ensuring that all staff in schools, offices and educational establishments have access to ICT equipment, management systems, intranet and Internet supported by appropriate training

B. Connecting the education community through broadband and establishing an open learning
environment

C. Promoting the embedding of ICT in the curriculum of all pupils and encouraging intermediary level students to attain certification in ICT

D. Increasing the utilization of ICT in educational management systems to raise the general quality of education

3.2.3 To support the training of world-class technically skilled ICT graduates

A. Integrating ICT skills, with a special focus on content development, within the curricula of faculties of education, law and business across Egypt

B. Developing the confidence, competence and capability of all education professionals and educational institutions to use ICT effectively; providing guidance on appropriate content; and working to enable teachers and instructors to support content development

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3.3 ICT for Health

The GoE and its Ministry of Health have established several e-health programs to bring better diagnostic and health services to a wider segment of Egyptian society. MCIT has facilitated the integration of ICT in health services, such as for health administration, clinical consultation and to bring continuing medical education to remote and underserved areas. Collectively, these programs aim to provide all citizens equal access to quality health services and enhance the skills of doctors and nurses.

One means to achieve these targets is through improving information dissemination and knowledge acquisition within the health sector. This is the aim of the Integrated National Health Record System project, through which MCIT is developing a medical health record system for the Ministry of Health. The first phase will be implemented in 400 health units, also known as family health units, spread across four governorates with one central site. Another project, the Information System and National Network for Citizen Health Treatment by the Government, uses automated systems to develop central management of treatment and direct patients to relevant therapeutic units and specialized centers around the country.

Emergency systems and telemedicine applications are essential to guarantee rapid response and high standards of medical care to citizens across the country. Telemedicine assists in relaying patient information that helps doctors to reach a diagnosis and to direct patients to the most suitable location for treatment. It provides those in remote areas with access to high-level diagnostics and allows for an enhanced response in emergencies. The Medical Emergency Call Center project aims to establish a modern automated system including a central medical emergency call room to control and direct ambulances. This will improve coordination of services, particularly in rural areas, saving effort and funds, and guarantee universal high standards.

MCIT and the Ministry of Health are also working together to establish a surveillance network to gather epidemiological information and monitor laboratory capacity in order to enable isolation of certain diseases. The network will assist epidemiologists in their work and enable the rapid dissemination of information, which will significantly facilitate disease control. Using cancer as a model, the focus at the current stage is on assisting the National Cancer Registry.

Objectives:

3.3.1. To improve the level of healthcare services in partnership with the Ministry of Health

   A. Creating knowledge networks to support decision-making by health authorities and health managers

   B. Supporting the integration of ICT infrastructure in the public health management system

3.3.2 To boost information dissemination and knowledge acquisition for the development and improvement of public health

A. Developing the infrastructure necessary for secure transmission of patient data in compliance with international EMR standards and laws for data and identity protection

B. Promoting the integration of and access to ICT in medical assistance and development services provided to the public

3.3.3 To assist in reducing the cost and increasing the efficiency of public health services across the country

A. Promoting telemedicine and online health services

B. Developing the capacity of medical professionals to utilize ICT to deliver improved public health services

C. Conducting research and development activities on the use of technology to assist the health sector

3.4 e-Content

The digital content industry encompasses the creation, design, management and distribution of digital products and services and the technologies that underpin these activities. It comprises companies producing traditional content, media and entertainment, software and multimedia, and electronic hardware and telecommunications services. Convergence among these sectors is being led in large part by the rapid growth in ICTs, the Internet and broadband fixed and wireless access, which are driving demand for the electronic distribution of content.

Egypt's business environment has a number of important strengths that facilitate the development of a sustainable competitive digital content industry. Strong skills have been developed in a number of digital content sectors, in particular e-learning, culture and entertainment. Aware that e-content production is a key step in the establishment of a knowledge society, MCIT has led the way to establishing an e-content industry in Egypt through its Arabic e-content initiative. This initiative aims to enhance the competitiveness of the Egyptian e-content industry by supporting the production, use and distribution of Arabic digital content on global networks. Given the lack of Arabic content on the Internet, this industry will provide significant export opportunities as Arabic content-producing businesses develop.

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In order to realize these goals, MCIT has entered into partnership with various international corporations, the Ministry of Culture, the National Information Center as well as local enterprises involved in content creation, development and conversion, web hosting, data security, and e-commerce and e-payment services.

The initiative has developed content in many categories. The digitizing of material from the National Library and Archives of Egypt, books from Egyptian publishers, material from the National Theater and media from news agencies. It has also developed portals focusing on news, entertainment, and science and technology.

The Arabic e-books and software initiative aims to enhance literary and artistic tradition in Egypt. A partnership between MCIT, the Egyptian Publishers' Union and the e-Learning and Application Union, this initiative has developed a sustainable economic model for content developers and publishers using Internet portals. This model facilitates the propagation of Arabic literary output and Arab thought in international libraries and bookshops by reducing potential publishing monopolies.

MCIT has also embarked on availing community content. This includes the community development portal www.kenanaonline.com, which aims to enable groups of citizens in cities and rural areas to use IT tools to obtain the knowledge necessary to improve their lives. Content is provided by communities, including NGOs, research institutions and local companies, to address local needs.

Objectives:

3.4.1 To develop a world-class, high-value Arabic digital content industry and the required Arabic applications as a base for economic and social development

A. Supporting universities, research centers, centers of excellence and companies in developing research and development capabilities in support of digital content

B. Increasing the efforts to encourage the creation and sustain the flow of local community digital content addressing issues of socioeconomic development

3.4.2 To increase the level and accessibility of Arabic online digital content

A. Expanding broadband capacity and ensuring its availability country-wide

B. Expanding the electronic documentation of Egypt's cultural heritage and its accessibility

3.4.3 To create an environment conducive to the sustainable production of Arabic online digital content

A. Developing an economic model based on revenue sharing between content providers and Internet service providers

B. Supporting development of the skills required for the e-content industry

C. Increasing legal protection for digital intellectual property through the introduction of legislation on theft of proprietary information

3.5 ICT for Government

While MCIT led the introduction of e-government in Egypt and the extension of ICT into public services, this responsibility was shifted to the Ministry of State for Administrative Development in 2004. Nonetheless, MCIT remains commited to enhancing the use of ICT on many fronts, including the health sector. Today, as a general mandate, MCIT supports other ministries in their ICT-related advancement programs and is currently acting as the ICT consultancy house for the government. MCIT's activities in this regard include establishing partnernerships with multinational corporations working in ICT through frame agreements and negotiating IT licensing schemes and application packages on behalf of the government.

MCIT has signed 40 protocols with other ministries and their affiliate organizations since 2001 for collaborative work and support, and has worked on a number of initiatives, among them infrastructure and capacity-building projects, to implement these protocols. Following its involvement since 2000 in a number of pilot projects serving various government entities, the ministry is now moving into the implementation of national mega-projects. These include the automation of the Land Registration System, a project that seeks to digitize all land data and maps in Egypt in order to simplify registration procedures.

Objectives:

3.5.1 To provide the necessary technical support to the GoE in issues pertaining to ICT and find cost-effective ICT solutions to support the GoE in national projects

A. Building competence within MCIT to provide consultancy for the GoE on issues pertaining to ICT

B. Facilitating the provision of government services to citizens

C. Maximizing the use of post offices to provide public services

D. Surveying government needs to determine ICT-related requirements

3.5.2 To liaise on behalf of the GoE in issues involving systems software and application

A. Helping reduce levels of ICT piracy in Egypt

B. Establishing partnerships with multinationals in the ICT sector to provide cost-effective solutions addressing the requirements of the GoE

C. Increasing legal protection for application and system software in Egypt

Innovation and ICT Industry Development

Overview

Economic globalization, driven by rapid development of technology in all sectors, has increased competition among economic players around the world. As a high level of competitiveness and an attractive investment climate are essential for the development of a thriving ICT industry, MCIT is working to create these conditions in Egypt. Its efforts are centered on the need to reform all elements that will improve the business climate for both SMEs and large companies in order to achieve industrial growth, create new job opportunities and raise national income levels.

MCIT's ICT industry development strategy begins with recognition that much has already been achieved, but that much also remains to be done. It examines the problems facing the further development of the ICT industry and the opportunities that present themselves. It identifies the work required to create an encouraging climate for business and sets out the steps necessary for the advancement of a competitive national ICT and ICT-related industry in the global economy.

The strategy addresses issues of capacity building and its promotion, pushing forward research and innovation, and branding Egypt as a destination for investment in ICT. This is to be achieved through realizing MCIT's vision of Egypt as a country where knowledge, innovation, applied research and investment drive the ICT industry into the global economy.

4

Developing an IT-enabled service industry

Building local capacity

A growing, competitive and sustainable ICT industry in Egypt

Applied research and innovation

Promoting ICT investment and foreign direct investment

4.1 Development of the Export-Oriented IT-Enabled Services Industry

Focusing on the development of the export-oriented IT-enabled service industry in the global market, MCIT engaged the US management consulting firm A.T. Kearney to conduct an objective assessment of Egypt's positioning as a location for off shoring IT and IT-enabled services, including business process outsourcing (BPO) and call centers. The study highlighted the growing success that Egypt is already enjoying, both in terms of major multinationals choosing Egypt as an offshore destination and local companies exporting IT solutions and other services to international clients. The study also revealed that Egypt offers a very attractive combination of competitive costs, skilled labor and supportive government policies. However, very few global companies are aware of these assets.

A.T. Kearney positioned Egypt number 12 in the offshore business and identified key segments for offshore service in the country as IT services and products, contact centers, engineering/technical support centers, BPO, localization and language services, content development and management, knowledge process outsoursing (KPO), and research and development engineering. The study recommended that IT services and technical support centers should be the largest growth targets, estimating that they will account for around 50% of the revenue target for 2010. Accordingly, a vision and targets for each segment were identified.

MCIT has adopted several mechanisms to realize its targets for the IT-enabled service industry. These include the introduction of legislation to support and regulate the sector, such as in the areas of IPR and e-signatures, as well as through deregulation – with the collaboration of the NTRA and the Information Technology Industry Development Agency (ITIDA). ITIDA has also developed a national strategy for export growth in the IT industry that focuses on creating a market-driven industry that follows international standards through public-private partnership.

MCIT will work to expand the infrastructure supporting the IT-enabled service industry in Egypt. This includes expanding the Smart Village as well as establishing a new technology park in Damietta and a call center park in Maadi. The ministry will further work on providing a uniform and streamlined telecommunication infrastructure nationwide and ensuring the availability of cost-effective, high-speed and reliable broadband connectivity that meets the current and future needs of industry and the country at large.

In addition to investing heavily in the establishment of state-of-the-art infrastructure, such as in the Smart Village, MCIT's efforts to promote Egypt's IT-enabled service sector include the formulation of frame agreements and various promotional activities at home and abroad.

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A culture of entrepreneurship and innovation is essential to the development of a strong IT-enabled service industry. Capacity-building programs have a role to play in stimulating attitudes and behavior that promote collaboration, creativity and innovation, especially among young people. Other strategies will systematically support the promotion of this culture by creating opportunities. Within this context, an Entrepreneurial Business Development Center will be set up to help emerging establishments satisfy the requirements of investors and financial institutions. It will also create a base of training institutes and instructors through a Training of Trainers initiative to create a solid entrepreneurship-training base.

Objectives:

4.1.1 To build niche strengths for the IT-enabled service sector

A. Conducting market research in the Egyptian and international markets

B. Encouraging investment in IT-enabled service infrastructure at international standards

4.1.2 To increase the visibility and profile of Egypt's service industry in the export sector

A. Establishing a multilevel communication campaign

B. Developing a coherent long-term strategy to promote Egypt as an offshore and outsourcing destination in IT-enabled services

4.1.3 To advocate for proactive policies that will encourage export growth for the sector

Strengthening legislation and regulations supporting IT-enabled service export industries

4.1.4 To tap into knowledge-based human capital for growth and development and develop the capacity of individuals, SMEs and industries to take full advantage of the commercial opportunities in the sector

A. Building the capacities of operatives to fulfill their role in providing quality services to sustain market development

B. Harnessing capacity-building programs to encourage an entrepreneurial culture within Egypt's ICT sector

4.2 Developing the ICT Capacity of Egypt

MCIT understands that the ICT industry in Egypt needs to be innovative, resourceful, skilled and business focused to advance and become internationally competitive. Skilled individuals are fundamental to developing the innovative and competitive capacity of local ICT companies and building world-class research and innovation activities. This requires strong, human resources with technical as well as business and commercial skills. Accordingly, MCIT places a high priority on ensuring that the education sector provides graduates with the technical and business skills required by the ICT industry.

MCIT is committed to developing Egypt's creative capital in areas related to ICT, aware that capacity building and ICT literacy training are essential components of the drive to build the information society in Egypt. These efforts complement those of the government to develop domestic policies to ensure that ICTs are fully integrated in education and training at all levels, including curriculum development, teacher training, institutional administration and management, and in support of the concept of lifelong learning.

The National Telecom Institute (NTI), the Information Technology Institute (ITI) and the E-Learning Competence Center (eLCC) are creating specialized training programs in ICT. Internationally competitive IT industry requires a strong pool of local talent. Over the coming four years, MCIT will focus on the enhancement of specialized technical skills programs that provide participants with additional soft and business skills. MCIT will also transform the basic ICT literacy programs into certification programs and provide academic programs to develop managerial and business skills for practitioners in the ICT sector.

MCIT championed the establishment of Nile University, a high-tech, not-for-profit research and development institution specialized in engineering technology and business administration. The university's Executive Development Program, designed in collaboration with the Egyptian Foundation for Technology Education Development (EFTED), provides general management training for middle to senior level managers working in both private and public sector companies in the Middle East.

The Software Engineering Competence Center (SECC) is providing Capability Maturity Model (CMM) and Capability Maturity Model Integrated (CMMI) services to local software companies, offering them technical and financial support to help them achieve Level 2 and 3 CMMI accreditation. SECC staff provide consulting advice, training and pre-appraisal and formal appraisal services.

SECC's goal is to train software engineers to apply software standards as part of the system development life cycle, as well as provide training in data collection and analysis, strategic planning and business models. SECC, in partnership with the Customer Operations Performance Center (COPC), is also involved in providing technical and financial support to Egypt's contact center industry to help it compete worldwide.

Other efforts that address both capacity building and entrepreneurship support include the Egyptian Information, Telecommunications, Electronics and Software Alliance (EITESAL), which focuses on bridging the gap between academia and the ICT industry. EITESAL helps young talent develop practical and industrial skills within educational programs. ITIDA has also recently launched a program to promote industry and university collaboration, linking academic research with industry and market needs. These programs are part of the Information Technology Academia Collaboration (ITAC) initiative, which brings value to IT companies, universities, researchers and the technology community through development of e-business applications.

Another priority for MCIT is support of ICT start-ups. The incubator initiative was created to assist small pioneer institutions facing difficulties in starting up and developing business skills and managerial efficiency, as well as to attract multinational companies to invest in developmental activities in Egypt. The three main funding mechanisms currently considered for incubators are angel funds, soft loans and venture capital. The services provided by the incubation initiative, in coordination with the Technology Development Fund (TDF), are not limited to financing alone, but cover various areas such as international and local marketing, management, manpower, and legal and facility development.

MCIT will continue to provide services to build the capacity of local ICT SMEs, providing them with accreditation as well as financial support programs, expanding incubation initiatives, widening the outreach of the Entrepreneurial Business Development Center (EBDC) to help growing IT firms satisfy the requirements of investors and financial institutions, and assisting in promoting the Egyptian IT industry in the global market.

Objectives:

4.2.1 To leverage the capacity of the local business community to enhance their global competitiveness

    A. Increasing the number of innovative start-up companies while creating a new cycle for innovation for industry development

    B. Supporting NGOs working in the ICT sector

    C. Facilitating the emergence of new enterprises in the ICT sector through expanding industrial support programs

4.2.2 To sustain the supply of skilled individuals needed for a growing ICT Industry

A. Expanding specialized capacity-building and certification programs addressing the needs of individuals, institutions and industry

B. Strengthening the relationship between the ICT industry and academic and research institutions to increase the flow of trained individuals into the labor market

4.3 Research and Innovation

For a country that has set itself the goal of achieving a full knowledge society, research, development and innovation are fundamental. For this reason, MCIT is committed to furnishing the instruments that guarantee maximum quality in this area. It is within this framework that MCIT drew up the Research and Innovation Strategic Plan 2007-10, which is, above all, an instrument that will provide the basis for a solid research, development and innovation system capable of fostering forward-looking initiatives and positioning Egypt, in the medium term, in the scientific and technological vanguard in the ICT sector both regionally and globally.

The essential advances in Egypt's capacity for research and innovation in the ICT sector will only take place if there is a large increase in resources and if the system's scientific and business bodies are suitably organized. The Research and Innovation Plan seeks to foster greater coordination between relevant agents to create an atmosphere conducive to innovation and economic growth. In fact, innovation is a complex process dependant on multiple relationships between the agents that make up the business, scientific and technological environments and the public administration.

In 2005, MCIT announced a plan to fund and manage Research and Development Centers of Excellence in various ICT-related areas. These centers, by focusing on research in key areas of national and global interest, simultaneously generate highly qualified human resource capacity. They concentrate and build on existing capacity and resources and enable researchers to collaborate across disciplines on long-term projects that are locally relevant and internationally competitive. An integral aspect of this endeavor is the creation of channels between the scientific and business communities. The project will also help create start-up companies specialized in the domains of these centers. Thus, these centers also play the role of "pre-incubator".

The centers of excellence include a network of experts who overlook the different research directions while MCIT acts as a catalyst by helping bring together members of industry, researchers, international experts, private and public sector players, universities and research institutions, etc. The ministry also provides input regarding local as well as world market conditions in the domain

of ICT, and supports the establishment of these centers with cash and/or in-kind contributions. The first such center, the Data Mining and Computer Modeling Center of Excellence, has achieved great success since its launch in 2005.

Raising the level of innovation in the Egyptian economy will require better transfer of knowledge from universities and research centers to enterprises and a significant increase in the number of innovative, technology-based companies. To attain this goal, a new entrepreneurial culture and the necessary instruments to encourage the transfer of knowledge and technology from universities and research centers to companies must be put in place. It is for this reason that the business plan competition was created. The competition aims to find talented entrepreneurs in the Egyptian ICT field and award and support their innovative business ideas. This mechanism is closely linked to the Technology Development Fund, Egypt's first ICT venture capital fund, focusing on seed and early-stage financing. The fund is a public-private partnership established to invest venture capital in promising Egyptian technology companies and start-ups. In addition to financing, the fund provides access to a range of support services and incubation facilities offered by fund advisers and sponsors.

Through the support of MCIT, multinational companies operating in the Egyptian market are encouraged to invest in research and innovation activities. Additionally, MCIT focuses on augmenting the innovation capabilities of businesses in Egypt, as well as scientific establishments working in ICT, to foster internationalization projects. With organized efforts, it is expected that the participation of Egypt in partnerships revolving around research and innovation will increase.

Objectives

4.3.1   To increase the quantity and quality of research and technology development activities undertaken in Egypt

> **A.** Developing centers of excellence through coordination between the different agents involved in research and innovation
>
> **B.** Fostering improvements in the quality of research and innovation conducted in Egypt as a prerequisite for global competitiveness

4.3.2   To develop a favorable environment for innovation and foster links and improved coordination between the various public and private agents in the Egyptian research and innovation system

> **A.** Consolidating the research, technology transfer and innovation system in Egypt's ICT sector
>
> **B.** Developing strategic partnerships with multinationals to increase investment, exports and employment and to support technology transfer

4.3.3 To define and coordinate research and innovation promotion policies and foster a scientific and technological culture in Egypt

A. Leveraging the capacity of the local business community to enhance its global competitiveness

B. Keeping the public informed of developments in science and technology in order to increase awareness of the importance of research, development and innovation

C. Establishing a multilevel communications campaign and a coherent long-term strategy to promote Egypt as an offshore and outsourcing service destination

4.4 Promoting ICT Investment and FDI

Many of the world's most prominent international ICT companies have invested in Egypt's future by locating branch offices and Middle East headquarters in Cairo. Egypt also has many homegrown success stories that show the strength of its ICT industry. Orascom Telecom has become one of the largest telecom companies in the world, with external operations in Iraq, Pakistan, Italy, Algeria, Tunisia, Bangladesh and Zimbabwe. ITworx, ITsoft, Sakhr, Harf and Arabize are just a few of the many Egyptian software companies successfully competing in the international marketplace. Xceed, Raya and other contact centers' recent growth shows that Egypt is becoming a prime destination for outsourcing.

The GoE has worked hard to improve the investment climate with a number of recent reforms. These include (i) WTO agreements that slashed trade barriers for ICT products and services, (ii) a new investment regime that allows full repatriation of profits, unrestricted ownership of investment capital, elimination of price controls and reduced tax rates, (iii) partial privatization of Telecom Egypt and other state-owned enterprises, and (iv) free zones and special economic zones that provide even more incentives for ICT companies including low-cost real estate, low tax rates and other benefits.

The coming years in Egypt will see many investment opportunities. In the immediate future, there is great demand for the development of backbone infrastructure, public data and Internet services, wireless local loop networks, expanded and enhanced mobile access, WiMax and a variety of off shoring opportunities.

4

Objectives:

4.4.1 To develop an ICT environment attractive to FDI and BPO

A. Providing favorable conditions and facilitating the procedures for setting up business in Egypt, including through enhancement of the legal and regulatory framework by formulating and deploying relevant legislation

B. Extending infrastructure and attractive zones and technology parks

C. Developing incentive packages and a favorable climate to attract FDI

4.4.2 To develop strategic partnerships with multinationals to increase investment, exports and employment and to support technology transfer

A. Increasing technology transfer through strategic partnerships with multinationals aiming to encourage them to invest and use local companies

B. Encouraging multinationals to establish outsourcing and offshore operations in Egypt and developing partnerships to support research and innovation centers of excellence

C. Attracting multinationals to establish manufacturing operations in Egypt

Conclusion

Egypt's ICT sector is a success story, with sustained double digit growth reaching 25% compared with 7% for the national economy. The key factor for success is the planned synergetic coexistence of a number of elements that converge to create vibrant and robust growth.

With a qualified human resource base of 250 thousand university graduates annually, the ratification of appropriate telecommunication and e-signature laws, together with a solid modernized ICT infrastructure at the crossroads of major global submarine cables, the foundation for the development of Egypt's ICT sector is in place. In addition, ICT reform and deregulation lead to higher FDI in the ICT sector. Systematic multi-stakeholder consultations and international expert research, enhanced by a coherent institutional framework, resulted in the identification of niche areas were Egypt's competitive edge could best be exploited. Examples include natural language applications, business process outsourcing, knowledge process outsourcing among others. Public private partnerships have proven to be the most effective means to achieve success in a number of initiatives launched by the Ministry of Communications and Information Technology.

An annual ICT business plan competition is conducted to spot young talents. An incubation facility was set up at Egypt's technology park, the Smart Village. Virtual R&D Centers of Excellence clustering start-up companies, multinationals, Egyptian expatriates and research centers were created in key niche areas such as data-mining and wireless technologies. A private Technology Development Venture Capital Fund was established. None of these elements would have had the expected impact if initiated separately or sequentially.

Subscription-free Internet enables all Egyptians to access the Internet at the cost of a local phone call. The PC 2010-Nation Online initiative provides low cost PCs in installments starting from $7 per month. IT Clubs exist all over the country primarily in deprived and remote areas to provide access and training to local communities.

Education, health and government services are key priorities for the country's development where ICT provides considerable added value. The Egyptian Education Initiative launched with the World Economic Forum is enhancing the effective use of ICT in all levels of education and for life long learning. The telemedicine network, the health informatics program and the medical emergency call centers are reducing costs and increasing efficiency of public health services in Egypt. Public private partnerships with multi-national companies have enabled Egypt to lead in providing e-government applications.

Arabic content on the web accounts for less than 0.5%, in sharp contrast to the massive contribution of Arab culture and civilization to human history. The Arabic e-Content Initiative launched by MCIT is creating a portal that will digitize in its first phase 2000 books and 300 software programs. The Center for Documentation of Cultural and Natural Heritage is documenting Egypt's heritage using the latest technologies.

Egypt is engaged in global policy dialogues and initiatives such as the Internet Governance Forum, which we are hosting in 2009, and the Global Alliance for ICT and Development. We are now confident that Egypt's ICT sector has gained recognition as an effective peer in the international ICT community.