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**NATIONAL PROFILE OF THE INFORMATION SOCIETY
IN EGYPT**

United Nations
New York, 2011

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List of Acronyms

ADSL	Asymmetric Digital Subscriber Line
AMANAK	Arab Internet Safety Portal
AVIT	Aviation Information Technology
BTA	Basic Telecommunications Agreement
CAPMAS	Central Agency for Public Mobilization and Statistics
ccTLD	country code top-level domain
CERT	Computer Emergency Response Team
CMMI	Capability Maturity Model Integration
CPI	Cyber Peace Initiative
CULTNAT	Center for Documentation of Cultural and Natural Heritage
CYTA	Cyprus Telecommunications Authority
ECDL	European Computer Driving License
EEI	Egyptian Education Initiative
eLABs	e-Learning and Business Solution Union
ESI	European Software Institute
EUN	Egyptian Universities Network
FLAG	Fiber Optic Link Around the Globe
FTTH	Fiber-To-The-Home
GALAE	General Authority for Literacy and Adult Education
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GoE	Government of Egypt
ICANN	Internet Corporation for Assigned Names and Numbers
ICT	Information and Communication Technology
ICT4IE	ICT for Illiteracy Eradication
ICT-TF	Information and Communication Technology Trust Fund
IP	Intellectual Property
IPCD	Intellectual Property Capabilities Development
ISDN	Integrated Services Digital Network
ISPs	Internet Service Providers
ITI	Information Technology Institute
ITIDA	Information Technology Industry Development Authority
M/SMEs	Micro, Small, and Medium enterprises
MCIT	Ministry of Communication and Information Technology

MCSD	Microsoft Certified Solution Developer
MCSE	Microsoft Certified Systems Engineer
MDG	Millennium Development Goals
MENA	Middle East and North Africa
MSPs	Multi Stakeholder Partnerships
NGOs	Non Governmental Organizations
NTI	National Telecommunications Institute
NTRA	National Telecommunications Regulatory Authority
PIACs	Public Internet Access Centers
PKI	Public Key Infrastructure
PPP	Public Private Partnership
ROOT CA	Root Certificate Authority
SECC	Software Engineering Competence Center
SPI	Software Process Improvement
TE	Telecom Egypt
TEN	marine cable “TE North”
TIEC	Technology Innovation and Entrepreneurship Center in Egypt
TIEC	Technology Innovation and Entrepreneurship Center
UNDP	United Nations Development Program
UNESCO	United Nations Scientific, Educational and Cultural Organization
WIESC	While in Egypt Stay Connected
WTO	World Trade Organization

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I. The role of Government and Stakeholders

A. National Information Society Policies and e-Strategies

In September 1999, a new national program to develop the information and communication technology (ICT) sector in Egypt was announced. The goals of the program were to foster the development of an information society in Egypt and stimulate the growth of a strong, competitive, vibrant, export-oriented ICT industry. The cornerstone of this program was the creation the following month of the new Ministry of Communication and Information Technology (MCIT) to lead these efforts.

Over the past 10 years, MCIT and its partners in government, nongovernmental organizations and the private sector have been successful in developing the foundational infrastructure and framework to establish an information society in Egypt. Following the successful conclusion in 2006 of the Egyptian Information Society Initiative, which resulted in the steady growth of the Egyptian ICT sector, a national ICT strategy document was developed in 2007¹ to encompass the vision for restructuring Egypt's ICT sector, maximizing the benefits of ICT for development nurturing innovation to support industry development, as well as making use of local, regional and global partnerships. Efforts exerted so far has lead to high sectoral growth rates compared to the whole economy where the sector's growth rate reached 10.20% in Q2 2010-2011 compared to 5.73% for the whole economy. The private sector contributed with the biggest share of the sector's real Gross Domestic Product (GDP) EGP 6.5 billion constituting 68% of the total ICT GDP during Q2 2010-2011. Moreover, the sector was transformed from one competing for subsidies and grants to a revenue generating engine and net contributor to the treasury, adding around EGP71 billion during the period 2003-2010 from licenses, sales taxes, customs tariffs, dividends and other items, which enabled the government to enhance and widen its provision of social services and developmental plans.

By fulfilling the expected targets and goals outlined in the previous strategy for 2007-2010, Egypt has decided to move to the next level to enhance the global competitiveness position of the country in the ICT sector, becoming the primary regional hub for innovation by 2020. In that context, a new strategy has been developed which is the Technology Innovation and Entrepreneurship Strategy 2011-2014 document. It details the strategic plan to positively influence Egypt's development through the growth of a vibrant and innovative ICT sector. This will be achieved by focusing on four goals:

- Enabling the establishment of ICT companies to operate and to innovate in Egypt.
- Enticing foreign and local ICT companies to generate enrich and expand on innovative ideas.
- Building Egypt's brand as a regional hub for innovation.
- Engaging diverse stakeholders in the task of generating, financing, supporting and deploying ICT-related innovation.

This document focuses on the progress achieved so far in light of the previous strategy of 2007-2010, leaving the new strategy with innovation centered at its heart to pave the future for a strong, dynamic and internationally competitive ICT sector in Egypt.

In the 2007-2010 strategy MCIT was working on achieving its goals through three main tracks:

1. ICT Sector Restructuring:

¹ <http://www.mcit.gov.eg/Brochures/Egypt-ICT-Strategy.pdf>

Reform measures undertaken by the Government of Egypt (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. As a result, the sector continues to grow steadily contributing 0.43 percentage points of the total GDP growth rate of the Egyptian economy. Levels of ICT employment also have been increasing reaching more than 200 thousand employees during Q2 2010-2011, in addition to the 40,000 employees working in Smart village alone and a number of 33,000 employees working in the outsourcing business. This figure represents only direct employment in the ICT sector; however, the number for indirect employment is even double this figure. A policy framework promoting open markets, competition and public-private partnerships were 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 during the years ahead to the benefit of all stakeholders, especially consumers and investors. A set of strategies had been in place to improve regional and international connectivity, foster deployment of broadband technologies, promote convergence services and address cyber security.

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. 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.

3. Innovation and ICT industry Development:

MCIT's efforts in the area of industry development 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. The strategy addressed issues of capacity building and its promotion, pushing forward research and innovation, and branding Egypt as a destination for investment in ICT. As a result, the revenues from ICT exports reached USD1.1 billion by the end of 2010. Egypt is now recognized by international organizations as a global hub in offshoring and outsourcing and is ranked among one of the top five outsourcing destinations in the world in 2010 according to the A.T Kearney report². The "outsourcing as usual" model is becoming commoditized with an increasing number of competitors from emerging markets. On the other hand however, efforts exerted by MCIT in the area of promoting innovation has led to laying down the foundation for an enabling environment to push forward

² <http://www.atkearney.com/index.php/Publications/offshoring-opportunities-amid-economic-turbulence-the-atkearney-global-services-location-index-gsli-2011.html?q=egypt>

innovation in the coming years where this objective becomes the cornerstone of the next strategy for 2011-2014.

B. Public Private Partnership

The ICT sector has successfully witnessed a number of applications of the Public Private Partnership (PPP) model. PPP is essential in addressing priority issues such as innovation, capacity building and awareness. The power of these partnerships lies in their ability to generate added value: to leverage scarce resources and bring the expertise, energy and financial capacity of the private sector to bear on complex projects and, at the same time, generate market and investment opportunities for private sector partners. MCIT has relied on these partnerships for both large-scale infrastructure development projects and smaller-scale capacity building and service-oriented projects. The government's approach to ICT industry development is based on facilitating the establishment of effective and strategic partnerships in: a) the areas of inter- and intra industry partnerships that promote better linkages, alliances, networking and the formation of industry clusters; b) partnerships between the education sector and ICT industry to meet industry needs; and c) collaboration between the government and multinationals to promote greater cooperation in the planning and funding of ICT industry development and infrastructure initiatives.

One of the recent examples in the area of PPP is the Technology Innovation and Entrepreneurship Center in Egypt (TIEC) that was launched in September 2010. The TIEC works under the PPP framework adopted by the government, academia, industry, and Non Governmental Organizations (NGOs). The TIEC acts as a center for business leadership and technology creativity and aims at developing technology innovation and promoting the culture of business leadership and entrepreneurship among the youth, as well as instilling a culture of innovation and risk-taking within the Egyptian ICT community as key drivers of economic growth.

C. The Role of Non Governmental Organizations

The ICT sector is enjoying an effective role for NGOs, there is a number of active organizations that work in close cooperation with MCIT for the interest of the sector in Egypt. The success of ICT for Development Projects has been dependent on successful Multi Stakeholder Partnerships (MSPs) to promote, facilitate and stimulate the creation of innovative enterprises capable to take full advantage of ICTs while enabling new mechanisms for funding and support of market creation and access. An example of NGOs in the ICT field in Egypt is the e-Learning and Business Solution Union (eLABs), which was established as an Egyptian NGO early 2003, as an initiative of a group of e-Learning content & system development firms. It aims at enabling its member companies upgrade and grow their businesses utilizing innovative & collective distribution channels, common resources, synergies and economies of scale.

Currently, there are 6 NGOs working in the ICT field who are considering joining under one umbrella to unify their goals and actions with the purpose of strengthening the ICT sector in Egypt.

II. ICT infrastructure

MCIT has been successful in creating an effective, efficient and reliable telecommunications infrastructure that has allowed the country to greatly expand the number of users and to support a growing and vibrant ICT industry. The ministry is continuing to upgrade and improve its ICT infrastructure as technology evolves, traffic grows, and usage increases and changes.

A. Market structure and regulatory landscape

Egypt currently has three mobile operators; Mobinil, Vodafone and Etisalat Misr with respective market shares 44.3%, 43.7% and 12% as of Q1 2010³. The cost of mobile service in Egypt is considered internationally competitive. According to the World Bank price basket methodology, the monthly cost of mobile services in Egypt decreased from USD 4.25 in Q2 2009 to USD 3.43 in Q2 2010⁴.

The mobile operators provide a wide spectrum of services including 3G services, value added services and Internet services. Competition in the market has led, not only to price reductions, but also to introducing a variety of packages that accommodate different needs, usage patterns and affordability.

In the fixed lines market, Telecom Egypt (TE) is the national landline provider and its network is composed of several major components, including access, transmission, switching, and signaling service intelligence to support the voice services. The TE switching network includes at least one national gateway in each governorate to serve long distance calls. Each of Cairo and Alexandria has one international gateway as well as two mobile gateways. Launched in 1988, Egyptnet, the packet data network owned by Telecom Egypt, was the first packet switching network in the country to offer data services to the public. Currently Egyptnet services include X.25 dial-up services and direct lines with access rates up to 256 Kbps. Also provided are Frame Relay services with access rates up to 2 Mbps, and digital leased lines with access rates up to 2 Mbps. This overlay data network provides basic services for business customers and is a backbone for sophisticated and ever growing needs of different economic activities that is mainly related to high level information technology infrastructure. Fixed exchange capacity has increased where the total exchange capacity grew by 14% from 12.7 million in 2005 to 14.5 million by December 2010.

Launched in 2002, the Free Internet service initiative resulted in large investments in network infrastructure by network service providers and competition among some 200 Internet Service Providers (ISPs) leading to high-quality reliable Internet service.

MCIT worked with its partners to ensure that basic telephone services were readily available to all the country's citizens. The National Telecommunications Regulatory Authority (NTRA) authorized new landline tariffs at the request of Telecom Egypt to make landlines more accessible and affordable. The fee for installing a new landline was reduced by 50% for both home and commercial use. Tariffs for calls between landlines and mobile phones were reduced by 33%, and paging service fees during peak time were reduced by 20%⁵.

To complement its efforts to ensure that all citizens have easy access to efficient and reliable telecommunications infrastructure, the NTRA has implemented a number of initiatives designed to maximize the benefits gained from effective management of ICT resources, including a national numbering plan, mobile number portability and international twinning projects.

NTRA paves the way for the steady growth of the industry by deregulating the market to the furthest extent and consequently attracting investments. To this end, NTRA has set a licensing framework for Telecom services to create a transparent, healthy and predictable sector to stimulate growth. It developed as well a licensing process for networks and services covering individual licenses and/or class licenses for all telecommunications application.

As mentioned above TE is the incumbent operator in Egypt to date. With the liberalization of the Telecom market TE acquired the license at the end of 2005. The license gives TE the right to offer fixed local and international telephony services, in addition to pay phone, prepaid calling card services and fax. The license also obligates TE to lease the core infrastructure of its telecommunication network. A second operator is

³ http://www.ntra.gov.eg/english/DPages_DPagesDetails.asp?ID=352&Menu=3

⁴ http://www.mcit.gov.eg/Upcont/Documents/Indicators_Q3_2010.pdf

⁵ <http://www.mcit.gov.eg/Upcont/Documents/swf/MCIT%20in%2010%20years.swf>

expected to be licensed and operate in the near future. As for mobile, currently three operators have 3G mobile service licenses. A 3G license offers the operator the right to utilize broadband 3G technologies to transfer data with speeds much higher than than GPRS technology can offer.

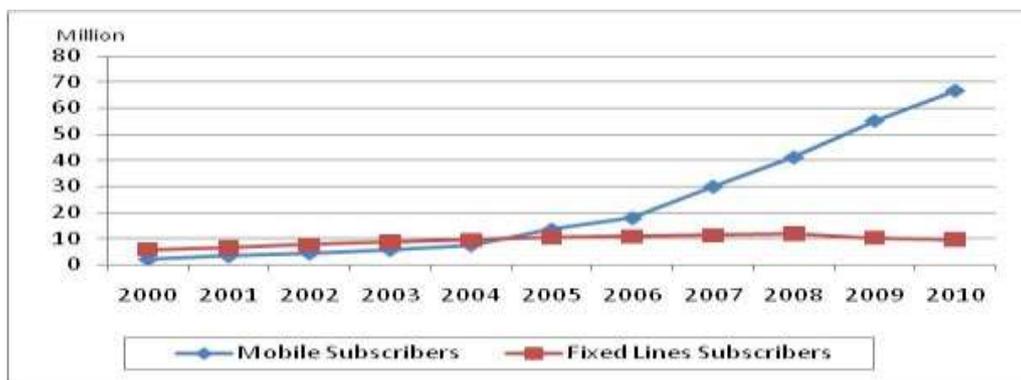
There are currently 3 operators in possession of pay phone licenses and 4 operators for prepaid calling cards licenses. The international services are classified into two different types of licenses, international services and gateway license and International submarine cable license. Currently TE and Etisalat have acquired the former while the Arabian company for submarine cable and Mena are the operators who have the latter. Data services companies in Egypt are divided into 3 classes: Class A, Class B and Class C. The licenses for the 3 classes were issued in 2000. Currently there are 6 companies in Class A and B and 39 in Class C. Satellite services include 3 different types of licenses: Inmarsat (2 companies), VSAT (4 companies) and GMPCS (3 companies)⁶.

B. Penetration of ICT services

One of the marked developments both globally and in Egypt is the continuous growth in the mobile users at the expense of fixed lines. As shown in figure (1), the growth rate of mobile subscribers is increasing on average by 42% annually compared to 5% annually for fixed lines during the period (2000-2010). The steep growth in mobile subscribers reflects a growing appetite for mobile services consumption and makes room for investment opportunities in that sub-sector. Monthly increments of mobile subscribers are estimated at an average of 1 million subscribers. The total number of mobile subscribers was 71 million – of which 97% are prepaid customers at the end of December 2010. By the end of December 2010, the mobile penetration rate reached 90.4% at an annual growth rate of 18.3% while the fixed line penetration reached 12.2%.

Mobile broadband data services are growing rapidly from a low level where subscribers using either smart phones or USB modems reached a penetration rate of about 36% of Internet users in Egypt. From the end of 2009 to the end of July 2010, the number of users accessing the Internet using a USB modem (3G) tripled from 250,000 to 927,142. This significant rate of growth may signal that Egypt is now moving rapidly as expected to mobile broadband access.

Figure 1: Fixed & Mobile lines subscribers (2000-2010)



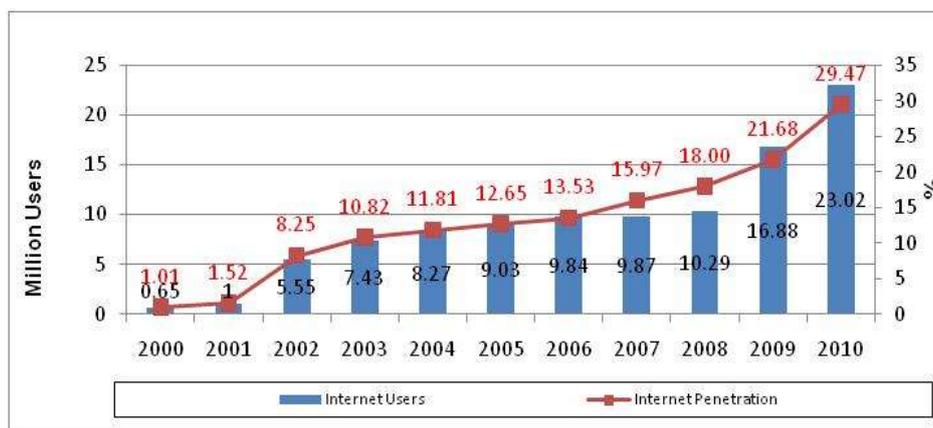
Source: MCIT, 2011

As for Internet, efforts of the government were reflected in the significant increase in Internet users from 0.65 million in 2000 to 23 million in 2010. Internet penetration in Egypt rose from 1.01% in 2000 to 29.5% in 2010.⁷

⁶ http://www.ntra.gov.eg/presentations/harvest_En.pdf

⁷ <http://www.mcit.gov.eg/FeatureDetails.aspx?id=mdA4rk4Vo/4=>

Figure 2: Internet Penetration (2000-2010)



Source: MCIT, 2011

C. Initiatives/Projects for ICT infrastructure and development of new services

Technological development in Egypt is a highly promising and dynamic market. Accordingly, the government is continuously working on providing the optimum investment, legal and administrative climate to further encourage investors in this field.

The Egyptian telecommunications infrastructure is engineered to provide substantial services and to absorb the rapidly growing ICT industry. With its current infrastructure, and the large number of international and regional fiber optic cables that pass through Egypt, the country has international and national links and reliable connectivity to the rest of the world. In this way, Egypt has excellent components for an emerging call-center hub.

MCIT's method for achieving rapid development in ICT infrastructure development and attracting investments has been to develop and implement projects building multi-stakeholder partnerships with government, industry and academia to leverage expertise and scarce resources. MCIT has relied on these partnerships for large-scale infrastructure development. For example, one of the outcomes of the Free Internet initiative was the large investments in network infrastructure by network service providers resulting in high-quality reliable Internet service. In addition, some projects implemented by MCIT have contributed in developing infrastructure through investments. These projects include IT clubs established throughout the country where MCIT furnishes the clubs with computers, printers, peripherals, Internet access, networks and a server. Private sector partners install the equipment and connections and maintain the technology while the host organization provides the space, infrastructure, utilities, furniture and security.

Another major investment in the ICT infrastructure is the Contact Center Park in Maadi which is the first equipped to cope with the country's fast development in ICT and to benefit from Egypt's exclusive and strategic advantages, namely the availability of qualified and multilingual workforce, excellent infrastructure, strategic location and political stability. The contact center park offers the latest call center technologies.

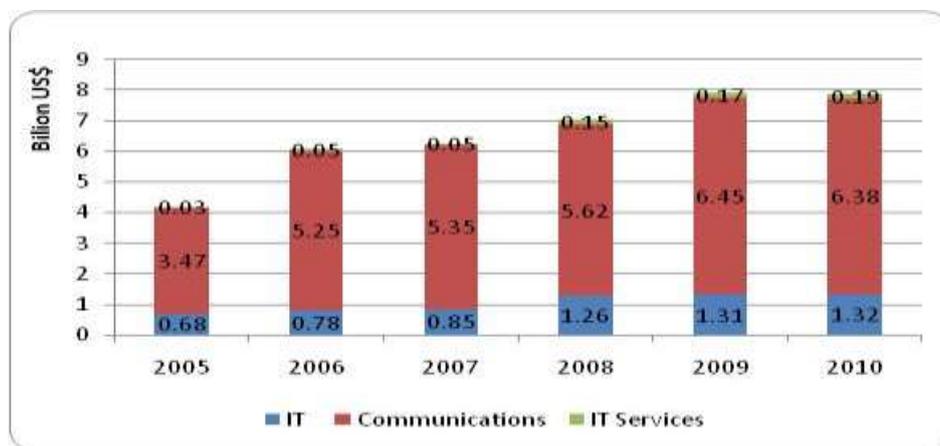
Recently, TE announced the launch of its first Fiber-To-The-Home (FTTH) implementation in the Cairo suburb area of Qatamiya. This represents a major achievement that enables the company to provide new and integrated services that will cater to current and future needs of residential and business customers through the fixed networks⁸.

⁸ Telecom Egypt, published at: http://www.telecomegypt.com.eg/english/press_details.asp?ID=684.

As an indication of support for potential investors, the Egyptian government offers a generous incentives package to each investor. The government works in partnership with each investor to customize an incentives package to cater to the investor's needs. Examples of these incentives include the following:

- The Egyptian government offers special tax exemptions and reductions for ICT industries.
- There are special reductions on land prices for investors in the ICT sector.
- Easing of export and import regulations.
- The Egyptian government offers training programs for professionals in the ICT industry that investors intend to recruit. The government offers training in IT, communications and networks according to investors' standards and specifications. These training programs are often offered at the government's expense.
- The Egyptian government assigns a government official to facilitate interaction with government organizations.

Figure 3: Growth of ICT Investments (2005-2010)



Source: MCIT, 2011

Investments in ICT infrastructure in Egypt has built a world-class IT and communications infrastructure. Going forward, MCIT's focus has shifted to investing in 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. ICT investment increased by 88.7% from 4.2 billion USD in 2005 to 7.9 billion USD in 2010.

D. ICT Connectivity

Higher connectivity has been stimulated by several projects such as the IT clubs, mobile IT club unit, "Egypt PC 2010 – Nation Online" for increasing PC ownership, spreading broadband as a means of access, in addition to projects for equipping ICT illiterate population with the know how to become connected and competitions to encourage young people to explore software and web applications and develop original content. Those projects diversify their targeted population to include households, businesses, schools and universities, government entities and rural areas.

Egypt's ongoing strategy to increase e-access is implemented in partnership with the private sector providing easy and affordable access to ICT to an increasing segment of the population. The government has facilitated the emergence of a network of IT Clubs in underserved areas, while initiatives, such as Egypt PC 2010 – Nation Online – an initiative aiming at providing PCs at affordable prices to Egyptian households with focus

on low-income brackets⁹ - will further increase access and improve the quality of public services. The project was launched in 2002 under the name "PC for every home" where the ministry developed a program that allows citizens to register for a computer at any telephone exchange in designated areas and pay for a low-cost Internet-enabled computer and software in affordable monthly installments, with no collateral and no deposit required. The computers can be bought on hire-purchase terms by anyone with a TE telephone line, with the periodic loan repayments included in the telephone bill. In 2006, the program was restructured and given a new name, "Egypt PC 2010 – Nation Online." The new program no longer requires ownership of a TE landline for eligibility for the extended payment terms, offering them instead through normal banking credit procedures. Additionally, the program provides greater protection of end-user rights through the introduction of quality assurance mechanisms and a customer service website. Cooperation with international IT providers has resulted in discounts of up to 50% on hardware. By 2010, the target that was set by MCIT to have 25% of Egyptian households owning a PC was surpassed to reach 31%. Currently, this program is managed by the private sector after being handed over by MCIT.

Egypt's broadband initiative¹⁰ aims at reducing costs of broadband, which has already been halved. As a result, the number of fixed broadband users in Egypt increased by 24% between 2009 and 2010 to reach 10.6 million. Egypt is at present working on a review of its broadband policies and is in the process of formulating a national broadband strategy to be issued in 2011. In this context, NTRA is currently performing a number of market assessment studies, and looking at different challenges and opportunities of the Egyptian broadband market. Those studies are looking closer at key parameters influencing the broadband market, such as affordability of broadband services, demand assessment and forecast, geographical maps of broadband availability, broadband economic impact, as well as technology alternatives and required investment. Activities, NTRA is undergoing, involve a number of consultations with national broadband market players, as well as a series of studies and projects with international consultancy agencies such as the World Bank, Detecon International and Qualcomm.

All this effort has indeed resulted in higher ICT connectivity reflected by increased Internet access and usage among different social brackets and in all regions of the country. In general, the proportion of Egyptian households using the Internet increased to 30% by 2010, from 24% in 2008. In addition, the proportion of Egyptian government entities using the Internet stood at 38.2% in 2010, up 2.6 percentage points from 35.6% in 2009.

Just as much as MCIT took the responsibility of spreading connectivity among citizens it has done so in other sectors of the economy, for example; Education and Tourism. Connectivity in the field of education has increased in light of the Egyptian Education Initiative (EEI) that aims to integrate IT in the education system offering higher connectivity to students, teachers and administrators. Around 66% of Egyptian schools in 2010 were connected to the Internet. On the other hand, "While in Egypt Stay Connected" (WIESC) represents a project designed to expand connectivity in the Egyptian tourism sector. The project, launched in 2006, has three tracks: a tourism ICT connectivity survey; the development of a master ICT and tourism connectivity plan, and pilot site implementation.

E. Internet Infrastructure

TE had previously signed with the Fibre Optic Link Around the Globe (FLAG) project an agreement, to build a local Internet Protocol (IP) peering point for FLAG in Egypt. This agreement resulted in decreased prices for international Internet connectivity.

In 2009, TE has signed an agreement with Cyprus Telecommunications Authority (CYTA) on its new marine cable "TE North" (TEN) Extensions. Under the deal, CYTA will purchase a fiber pair on TE North capable of transporting a terabit of telecommunications capacity from Cyprus to Egypt and Europe. TEN

⁹http://www.mcit.gov.eg/ict_access.aspx#Nation

¹⁰ <http://www.mcit.gov.eg/FeatureDetails.aspx?id=tZNPnpq/SyU=>

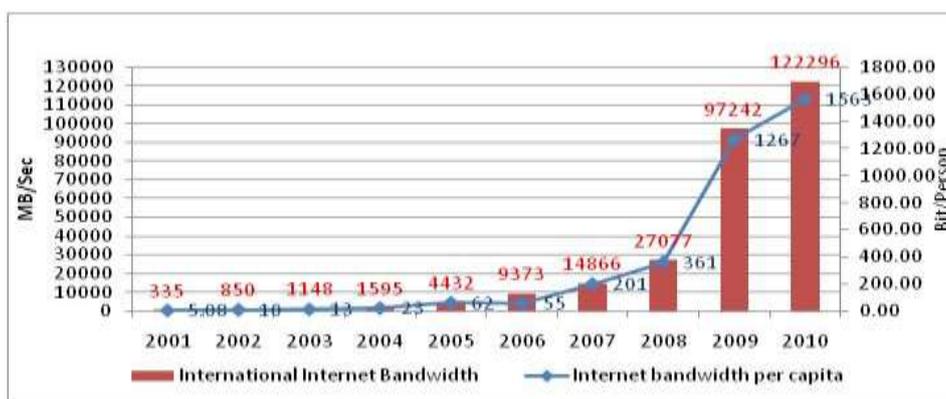
marine cable will be extended to Cyprus, which creates business opportunities among Europe, Asia and the East Mediterranean in this domain. According to this agreement; TE will obtain both the opportunity to transport CYTA traffic to key European and Asian destinations as well as to cost-effectively reach regional markets accessible via Cyprus. The agreement aims to prop up regional partnerships among the East Mediterranean countries, and will work on establishing several grid points to connect to the internet in Eastern and Western Europe. The new cable will work on meeting the increasing demands of TE's customers in Egypt and their great interest in broadband internet. In 2010, the cable system was installed with underwater branching units, which enable TEN to be extended to other Mediterranean countries in the future, including Greece. Along with the current fiber-pair customers, who rely on TEN as a critical conduit between Asia, Africa and Europe, this agreement has assured that TEN is truly becoming a regional and global hub for international communications through the region.

NTRA has awarded a contract to Orascom Telecom’s subsidiary; Middle East and North Africa Submarine Company in September 2007 to build, operate and maintain the infrastructure of an international submarine cable and fiber optics network in Egypt to content the Middle East and Asia with Europe. This is a mega project with investments for new cable systems and several landing points on Egyptian shores. This major infrastructure development will add value to the Egyptian economy, opening new markets, and providing new job opportunities. Total investments of the mega project are as much as \$233.8 million. The 20-year license fee is \$ 500,000 in addition to the annual fees stipulated in the contract.

In 2010, MCIT awarded a triple-play license to construct and operate access networks in gated communities to a consortium headed by TeleTech. The renewable license is valid for 15 years, during which time the licensee must pay the government 8% of annual income generated through the project. NTRA had earlier decided to award licenses for the construction and operation of access networks in gated communities to consortia headed by LinkOne and TeleTech following their submission of the best technical and financial profiles. The LinkOne consortium comprised Link Egypt, LINKdotNET and Weather Capital Investment Company. The other comprised TeleTech, Vodafone International, Aviation Information Technology (AVIT) and Giza Systems Company.

Egypt’s international Internet bandwidth witnessed steady growth between 2001 and 2010, with an average annual growth rate of 105%. Egypt’s total international Internet bandwidth reached 122,296 Mbs by December 2010, bringing per capita bandwidth to 1563 Bps.

Figure 4: International Bandwidth capacity (2001-2010)



Source: MCIT, 2011

III. Access to Information and Knowledge

A. Public Domain Information

Today many Egyptian websites are offering knowledge and information covering several subjects including travel and tourism, sports, news, art, education and business. Second level domains cover a variety of areas such as:

- com.eg: Commercial sites.
- edu.eg: Educational sites.
- eun.eg: Egyptian Universities Network.
- gov.eg: Governmental sites.
- mil.eg: Military sites.
- name.eg: Personal "name" websites.
- net.eg: Networking.
- org.eg: Egyptian organizations.
- sci.eg: Scientific sites.

For example, Egypt's Center for Documentation of Cultural and Natural Heritage (CULTNAT), a website that documents the various aspects of Egypt's tangible and intangible cultural heritage as well as its natural heritage using ICTs (<http://beta.cultnat.org/>). Another example is "Egypt Memory Online Shop" which is the first of its kind in the Middle East, where the portal offers a unique e-commerce model for cultural heritage that provides visitors and shoppers worldwide with a variety of cultural and heritage products like books, CDs, atlases and high resolution images (<http://www.egyptmemory.com>).

Digital Libraries and archives also provide rich information resources for the public. Examples of websites for Egyptian libraries are the New Library of Alexandria (Bibliotheca Alexandrina) (<http://www.bibalex.org/English/index.aspx>) and the National Archives of Egypt (<http://nationalarchives.gov.eg/nae/home.jsp>).

B. Access to Information and Public Information

Realizing the need to grant the people more access to information as a direct spillover to the Internet, MCIT has worked on two dimensions to achieve this goal and has witnessed success in both. The first dimension is through increasing access to the Internet via broadband access and hence to the information offered online. As mentioned earlier, MCIT indeed has managed to increase the number of broadband users in light of the broadband initiative, which is a process yet to continue through closely observing the market and defining demand drivers to work on formulating new policies aiming at boosting the growth in broadband users. On the other hand, the second dimension was to avail e-content.

The Egypt Information and Communication Technology Trust Fund (ICT-TF) was jointly established by MCIT and the United Nations Development Programme (UNDP) in January 2002 in order to investigate the different means by which ICTs can enrich the livelihood of Egyptian citizens, and most importantly how to foster socio-economic development through creating public-private partnerships to support the use of ICTs.

The Fund has sponsored several projects, in six main sectors; Community Development, Agriculture, Education, Health, ICT 4 Disabilities, and ICT for Micro, Small, and Medium enterprises (M/SMEs).

Nevertheless, content development is considered nowadays a very crucial tool through which development experiences can be exchanged and further developed. Unfortunately, few Arabic content portals are available. This forms an obstacle that hinders the Arabic-speaking nations from development. Thus, there was a need for an Arabic content portal that could lead these nations with all their societal segments towards comprehensive development.

In light of the above, ICT – TF has launched several projects addressing such a need. An example of such initiatives is “Kenanaonline community development portals”. These portals aim at providing Arabic specialized content on the internet in order to tiger socioeconomic development. It is based on the creation of an online arena, where its users can share, consult and exchange knowledge and expertise in various specializations. Its Arabic content tackles all kind of knowledge; Entrepreneurship, Farming and Agriculture, Fisheries, Soft Skills, Small Industries, etc. Its sub-portals are as follows;

- Aradina/ Our land: Focuses on agriculture and livestock (www.aradina.net)
- Byotna/ Our Home: Focuses on family and home (<http://www.byotna.net>)
- Ayadina/ Our Hands: Focuses on (M/SMEs) (www.ayadina.net)
- Youm Gedid/ A New Day: Focuses on Egyptian and Arab youth (www.yomgedid.com)
- Erada/ Will: Ongoing efforts are being done to launch the first new specialized community development Arabic portal for disabilities and all kinds of impairments (hearing, visual, mental,...etc)

Since its initiation in 2004, KenanaOnline has grown tremendously in both scope and popularity. Recent Analysis has shown that it ranks one of the largest 20 Egyptian portals wit 75,000 daily visits and 50,000 unique visits. In addition, almost 1,000 pages are being added daily amounting 30,000 pages per month.¹¹

Moreover, in the ICT-TF’s attempt to attain a modernized developed society, the Telecentre network.org MENA project was established to support the creation of a strong and independent regional and national Telecentre network. This network provides on-demand support e-services to all Telecentres in Egypt and the Middle East and North Africa (MENA) region. In addition, it increases the availability and accessibility to relevant Arabic knowledge on Telecentres’ challenges and opportunities allowing a room for sharing and exchanging knowledge and expertise. Through its e-services, “sharing” feature and content, Telecentre network helps build the capacities and the technical skills of its users and people working in the field.

Until now, Telecentre.org members have reached 1055 member from Egypt and the MENA region. These members have added 816 Arabic blogs and have published 4 issues of Telecentre Times Arabic Newspaper. Furthermore, the network has resulted so far in organizing 10 Workshops national and regional.

C. Multi-purpose Community Public Access Points

The IT Clubs model offers a communal solution to problems of affordability, accessibility, and awareness. IT Clubs are an essential component of the country’s national plan to familiarize people with computers and promote ICT awareness regardless of skills, gender, and income level. IT Clubs allow affordable Internet access throughout the country to those who cannot afford to own a PC. The price for access is around LE 1 (about US\$ 0.20) per hour.

The value of the IT Clubs project is in its availability to the mass population. Computer literacy has become second nature to many societies and individuals without which they find themselves isolated and excluded. The challenge is great in a country like Egypt due to the high illiteracy rate and the low incomes of many families.

¹¹ EGYPT ICT TRUST FUND REPORT 2010, page 7, 2010

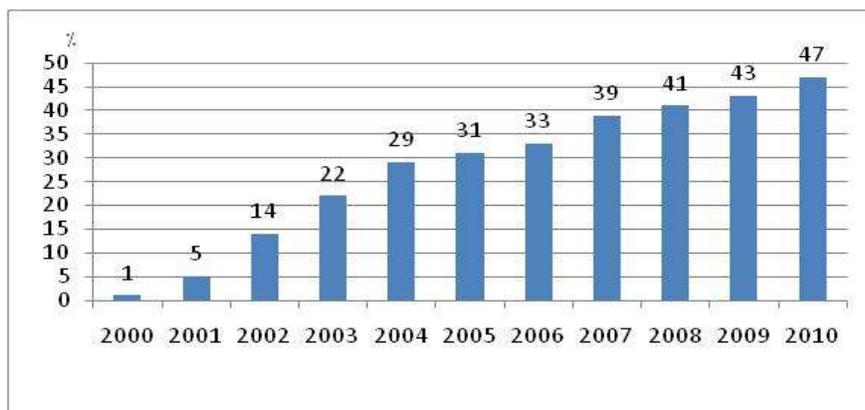
In a survey done by MCIT and Central Agency for Public Mobilization and Statistics (CAPMAS) on the IT clubs, 73.5 % of the respondents mentioned that IT clubs have positively impacted them the most in the area of acquiring advanced computer and internet skills, and 15.6% pointed out that they benefited from services provided by IT clubs in getting better job opportunities.

MCIT’s IT Clubs are part of a landmark initiative to enhance access to ICT and provide all citizens with the opportunity to become computer literate, regardless of their initial skill level. In 2010, the number of IT Clubs reached 2,164, 1,918 of which offer Internet access. These clubs house 25,919 computers and peripherals, have served more than 1 million users, and have generated more than 8,000 job opportunities. With almost 300 new clubs established every year, MCIT intends to reach every area of the country. The expansion is not only in the number of clubs but also in the activities and target groups within each club. MCIT is working on activities for those with special needs, and children who have left the schooling system.

To provide access in areas not served by IT Clubs, MCIT created mobile IT units, supported by the ICT -TF in collaboration with various NGOs. These units are buses or caravans equipped with 10 or 20 computers, data projectors, a satellite connection for internet services, a power generator, power stabilizers and ups, a local area network, an air-conditioning, and a printer & a scanner. They travel to remote areas to spread awareness of various communication and information technologies. This project addresses the lack of computer access in rural and secluded areas as well as the high rates of digital illiteracy. They also serve as training centers, with training offered free of charge. The IT Club toured 16 governorates in Egypt training services to 4413 persons in 62 places and more than 150,000 people have benefited from such mechanism.¹²

The proportion of localities with public Internet access centers (PIACs) stood at 47% in 2010, up from 43% in 2009.

Figure 5: Public Internet Access Centers (PIACs) (2000-2010)



Source: MCIT, 2011

¹² EGYPT ICT TRUST FUND REPORT 2010, page 7, 2010

D. Using different software models

Cloud Computing

Cloud computing refers to the provision of computational resources on demand via a computer network. The user's computer may contain almost no software or data (perhaps a minimal operating system and web browser only), serving as little more than a display terminal for processes occurring on a network of computers far away. The cloud enables greater efficiency because it delivers just the right amount of technology without an overspend on technology that is rarely or might never be needed. At the same time, it helps increase responsiveness and enables businesses to take on new computing activities that may have been cost prohibitive previously.

The TIEC's Cloud Computing Technology Competency Center aims to establish infrastructure for future technology and provide the necessary expertise to the Egyptian workforce to create a strong base of experts in this field. The center will also focus on building a strategy for companies to build cloud-computing applications ready for export. A partnership with Microsoft International has been established aimed at supporting 30 companies in Egypt and the region expected to contribute to the development of international innovations in cloud computing. These companies would also contribute to the assimilation and benefit of local and regional markets through communication with experts from around the world to address strategies and best practices and to exchange knowledge on technology and commercial challenges.

IV. ICT Capacity Building

A. Basic Literacy

In Egypt, more than 30% of the population is illiterate, with higher rates for women, and this is a persistent, debilitating hindrance to the ability of these citizens to participate effectively in society. MCIT has taken a number of steps to use ICT to address this very serious problem. The ICT for Illiteracy Eradication (ICT4IE) program produces electronic content for teaching Arabic and elementary mathematics through a mix of taught and self-study courses based on the General Authority for Literacy and Adult Education (GALAE) curriculum. The project produces e-content for teaching Arabic words and characters and elementary mathematics, delivered through IT Clubs, the Internet and CDs. The first CD was tested and evaluated in 2004. GALAE and the National Council of Women organized pilot sessions in Qaloubiya and Fayoum for 90 illiterate men and women. These tests were evaluated and compared with traditional illiteracy eradication classes in the same governorates, and both learning and retention rates were higher with the CDs. Following the trial of a second CD in 2005, MCIT issued a contract for large-scale production of the double CD. Moreover, MCIT has established Training of Trainers programs in 15 governorates to serve the growing demand for basic literacy training. In 2008, MCIT and GALAE signed a memorandum of understanding to use the ICT4IE course to eradicate illiteracy in 10,000 people annually in the 10 governorates with the highest rates of illiteracy.

Illiteracy Eradication - Siwa Oasis

The program, adopted by ICT -TF, directly impacts and empowers the community in Siwa Oasis in areas of literacy, education, health and small and medium enterprise through integrated and focused interventions applying ICT in various sectors. ICT4IE Efforts on this track are focused on reducing illiteracy among women. To overcome local traditions that restrict women's movements outside the home, an innovative solution was created in the form of the "tabluter". The tabluter is a customized ergonomic embedded single CPU that runs for four independent users. It is used as a mobile education lab in individual homes, promoting literacy through interactive software. Egypt ICT Trust Fund has succeeded in decreasing illiteracy

in Siwa to a marginal rate of only 2% of the community. Two tabluters, used to teach women in their homes, are in use, while five more are being built.

B. ICT in Education and Training

The Egyptian Educational Initiative (EEI) is a PPP between the government and the World Economic Forum's IT members community. The initiative supports Egypt's overall education reform efforts and maximizes the potential for public-private collaboration to achieve its goals.

In May 2010, MCIT organized a workshop to put into force a system to follow up on the operation of technological infrastructure in schools. The aim is to train a coordinator from each governorate to use the system and provide progress updates to education directorates. The system monitors activities at labs and upgraded classrooms. It also detects malfunctions and manages the maintenance of the technological infrastructure at 2,000 EEI-affiliated schools.

EDUEgypt program

EDUEgypt program started in Egyptian Universities with the academic year 2007/2008 aiming at leveraging the students' skills and the technological advancement to cope with the pace of evolving new industries worldwide specially the outsourcing industry. Only 5 weeks after signing the protocol between the Ministry of Higher Education and the Ministry of Communications and Information Technology, the first (pilot) phase started in 5 faculties representing two Universities (Cairo and Ain Shams) by training a number of 3000 students to cater for the BPO and ITO industry, on a program designed by a committee representing ITO and BPO industry stakeholders prioritizing their skill set needs that are expected from the program graduates.

The program had the objective of boosting the language, soft skills and technical skills for the graduates of Egyptian faculties based on the industry requirements. Before the end of the first phase, 60% of EDUEgypt's students were offered job opportunities. Now after re-ranking Egypt among the first five outsourcing destination worldwide, EDUEgypt program is expanding its activities vertically and horizontally for the academic year 2009/2010 to include 10000 students from 10 Egyptian Universities, geographically covering most of Egypt.¹³

Vocational Schools Development Project

Within the framework of the EEI, the Vocational Schools Development Project enhances and strengthens vocational education and training using ICTs. The target beneficiaries are teachers and students at industrial schools, as well as the wider communities surrounding these schools. In this project, 10 vocational schools will be provided with ICT infrastructure, e-curricula and human resources capacity building, and an e-learning center will be established to serve all vocational school students and teachers, as well as trainees from the surrounding communities. The center will be operated in cooperation with the Italian Istituto Don Bosco. This pilot project is intended to become a model of vocational education and training that can be replicated domestically and internationally. The selected industrial schools will serve as Vocational Community Learning Centers, providing ICT-based courses as well as vocational courses to the community at large.xor.

Integrated ICT for Education – Siwa Oasis

The Integrated Program to Develop Siwa Oasis Using ICT is a community development program, adopted by ICT Trust Fund. The program is based on the provision of ICT-enabled services in various sectors to establish a sustainable integrated ICT for development model for rural communities. On the Education track, the project could establish comprehensive ICT and networking infrastructure for six schools; deployed

¹³ <http://www.iti.gov.eg/newiti/trainingprograms/training-eduegypt.asp>

school management and learning management systems, accompanied by a comprehensive capacity-building program enabling teachers and administrators to integrate ICT programs into the education process; and alleviated illiteracy among women through cooperation with the Siwa Community Access Center for Women. Three schools covering grades 1 to 9 have been equipped with computer labs and Internet access; three more smart schools are currently under establishment; 41 teachers have improved their teaching knowledge and skills; 1,128 students have new IT skills; school dropout rates have declined, especially for girls; and adults are benefiting from the use of the computer labs as community learning centers after school hours. The Integrated Program to Develop Siwa Oasis Using ICT came first in the Arab Gulf Program for Development's International Prize 2010.

C. Training Programs for Capacity Building in the Use of ICT

Training programs are at the core of Egypt's effort to build its ICT capacity. Training is offered through many organizations public and private and in partnerships with international partners. Specialized Training Agencies like the Information Technology Institute (ITI) are providing training programs in different tracks to respond to the market needs for qualified personnel in addition to accredited academic degrees. Programs include: CSADP, MCSA, MCSE, LAN Administrator, Linux Administrator, UNIX Administrator, Web Development, Programming Languages, and Soft Skills. Technologies and concepts like Cloud Computing, NANO Technology and Green IT are among the topics that formulate different ITI specialization tracks. Academic degrees include: MSc in IT, MSc in Electronic Commerce, MSc in System Dynamics, MSc in Mechatronics, and MSc in GIS.

Another specialized training agency is the National Telecommunications Institute (NTI), which is a center for telecommunications systems, technologies, policies and management. NTI is considered a center of excellence, a leading training and educational institution, and focal point for applied research activities in the field of telecommunications. The research and training facilities in all different departments together with a team of highly qualified researchers and technical staff enhance NTI capabilities to provide services and support for the telecommunications sector not only in Egypt but also in the rest of the Arab world and the whole region. Figures of MCIT show that the number of trainees at ITI and NTI by the end of December 2010 amounted to 40,770. The total number of ICDL certified trainees reached 520,120 trainees at the end of December 2010.

Egyptian National Program for the International Computer Driving License

The International Computer Driving License is an internationally accredited end-user computer skills certification program established by the European Computer Driving License (ECDL) Foundation. The program raises participants' knowledge of ICT, increases their level of competency in using personal computers and common computer applications, and improves job prospects by providing an internationally recognized qualification. ICDL is available in 146 countries and has become a global benchmark adopted by governments, international organizations and the international business community. The Egyptian National ICDL Program was launched in May 2006 by MCIT in cooperation with the Ministry of Education, the Ministry of Higher Education and the State for Scientific Research, and the Ministry of State for Administrative Development. It is run in cooperation with the ECDL Foundation and its representative in Egypt, the United Nations Scientific, Educational and Cultural Organization (UNESCO) Office in Cairo, and is supported by the local private sector and civil society, as well as HP. Available at about 350 training and testing centers across the country, the program aims at granting one million Egyptian citizens ICDL certification. MCIT is committed to ensuring that ECDL Foundation quality standards are implemented throughout the project, and offers the ICDL training, material, skill cards and the seven module tests free of charge to all applicants. In 2010, 261,448 citizens achieved ICDL certification through the program, bringing the total number to 485,958, while another 200,000 are in the process of acquiring certification. To support

this progress, MCIT established a number of new ICDL-accredited training and examination centers in Daqahliya, Qalioubiya, Qena, Sharqiya and Sohag during the year.

D. Innovation and Patents

By promoting entrepreneurship and stimulating an innovation-based economy, MCIT aims to provide a major boost for the Egyptian economy and raise Egypt's global profile, particularly in the global technology and innovation community.

Under the earlier patent law, patent protection was available for chemical processes for foods and pharmaceuticals but not for resulting products. It also expanded the protection for undisclosed information. Expanding the usage of the Internet and the technological devices in addition to the increase of the counterfeit products in the global trade present new challenges for the enforcement officials, courts, and persons seeking the benefits of this expansion in legal protection may experience delays as procedures are developed to address issues that are new to Egypt.

In addition to expanding the types of protection available in Egypt, Law 82/2002 strengthened the intellectual property system by mandating a full examination system for patents and industrial designs. Under the previous industrial designs law, the Industrial Designs Office lacked legal authority to refuse registration to any application, with the result that applications known to be legally insufficient were sometimes accorded registration.

Law 82/2002 also introduced specific provisions on enforcement, with an emphasis on conservatory measures such as seizure of goods to determine infringement and preserve evidence, and in some cases seizure of the implements of infringement and disposition of the infringing goods. In the past, injunctions have not been frequently granted in Egyptian courts, but judges have recently begun issuing injunctions in appropriate IP cases, and there have been a number of cases in which the courts imposed maximum penalties in criminal cases and issued commercially appropriate damage awards in civil cases.

The Intellectual Property Capabilities Development (IPCD) program aims to develop the innovation and intellectual property (IP) capabilities of ICT companies to facilitate identification and documentation of possible inventions. This is the first step towards developing a strong intellectual property landscape in Egypt that would allow the country to evolve as an IP hub and increase revenues from IP commercialization. The program supports 30 companies, assisting them in increasing market share by strengthening their competitive advantage and positioning themselves as innovative companies. This support will empower them to influence the direction of new technology, provide higher value products and services, and increase company value. Areas of focus include IP management blueprints, emerging technologies and inventor training. The program is run in partnership with IBM, which received 4,914 US patents in 2009, which was the 17th consecutive year it has topped the list of the world's most inventive companies.

Microsoft's Imagine Cup, the world's premier student technology competition is a competition designed to encourage innovation and the development of IT skills is. Organized by the UNESCO and open to all students, the Imagine Cup has become a global competition whose goal is to harness students' talent and passion to technology innovations that can solve real-life problems. Participants compete in the specialties of software design, embedded development, game development, a programming battle, an IT challenge, algorithms, photography, short films and interface design. In 2008, Egypt's team traveled to Paris to participate in the Imagine Cup finals, where they were among the top five finalists to receive a special award for development of rural areas

MCIT established the Software Engineering Competence Center (SECC) in 2001 to promote and support the development of the software industry. In 2005, SECC became affiliated with Information Technology

Industry Development Agency (ITIDA). Since its launch in 2003, SECC has helped nearly 30 companies reach Capability Maturity Model Integration (CMMI) Level 2. SECC's Software Process Improvement for SMEs program supports 70 companies through a four-round program. In 2008, SECC signed a cooperation agreement with the European Software Institute (ESI) to establish an ESI center in Egypt and offer Egyptian expertise primarily in the fields of information security, integrated software development, international quality criteria and IT services. In 2010, SECC signed an agreement with the Egyptian Software Testing Board to become the sole examination center and certification body for the International Software Testing Qualifications Board in Egypt. SECC launched the sixth annual round of the Software Process Improvement (SPI) for SMEs program in January 2010 to support 14 software companies through training and technical consultancy. By the end of the year, SECC had served 105 SMEs. The program aims to raise the quality of the software products of these companies and boost their technical standard via the utilization of state-of-the-art software development processes. By the end of 2010, SECC had trained around 13,000 IT specialists and experts from more than 480 companies in software process improvement, software engineering and other related fields. SECC recently announced the launch of the 7th round of the SPI program implementation for 2011.

V. Building confidence and Security in the use of ICT

A. Use of Electronic Transactions and Documents

An electronic signature law was issued in April 2004 and went into effect in May 2005. The law helped expand online banking services, gave legal force to electronic signatures. The e-signature law provides the support infrastructure for the authentication of electronic transactions, allowing for the development of e government services, electronic document exchange, and e-commerce amongst other benefits. To help roll out the e signature law efficiently, the government established the e signature Regulatory Authority within ITIDA to build and operate the Root Certificate Authority (ROOT CA) representing the trust anchor for all relevant parties within that domain. The trust center is established according to the latest international security specifications.

As the law puts the legal and regulatory infrastructure for e-business it clarifies the borders and limits of electronic documentation and identifies relevant and irrelevant practices. Hence, it creates a transparent environment for doing business electronically in a way that protects different business stakeholders. This will help improve the efficiency of government services putting Egypt on an equal footing with global competitors in a world where e-signatures are becoming the norm.

Accordingly, digital signatures are being issued in Egypt since late 2009 with around 5000 signatures already issued for financial institutions, companies and individuals by the end of 2010. ITIDA has successfully laid down the infrastructure necessary for that process and encouraged the companies licensed to issue signatures (so far 3 companies) to comply with this infrastructure. In addition, it has assisted in creating a secure environment for the process that has resulted in establishing the Egyptian model as the most successful in the Middle East and Africa. This has been done through requiring an official copy kept with ITIDA to guarantee the protection of the consumer in case any of the companies issuing signatures goes out of business.

This progress in issuing digital signature might mark a new political development where a National dialogue is being held to discuss the possibility of using digital signatures in E-voting in the coming elections.

B. Online and network security

Recognizing the importance of ensuring people's safety on the Internet, MCIT has taken concrete steps to create an interactive platform to share relevant information, best practices, concerns and resources. Within

this context, the ministry has taken measures to stimulate dialogue within the community, providing a repository of knowledge and progress in the Internet safety field.

The Arab Internet Safety Portal “AMANAK” is a comprehensive portal focusing on online safety in the Arab region. This portal was developed to provide resources and materials of internet safety issues in Arabic language, and provide an arena of dialogue for users of various age groups as well as provide a platform for local initiatives in Arab countries to share experiences and knowledge. AMANAK have six target groups kids, teens, youth, parents, educators, and law enforcement entities. The content of AMANAK focuses on the digital citizenship including safety, security, and ethics. AMANAK includes interactive content as additional resources like movies, games, printouts, activities, and books. In addition. AMANAK offers a platform for communication within the Arab community by providing services like inquiries, complaints, and suggestions. As well as online training, Arab countries can participate on AMANAK through an interactive platform to share relevant information, best practices, concerns and resources.

In line with the active efforts of the Women’s International Peace Movement to secure the safety of children and families on the Internet, the third annual meeting of the Cyber Peace Initiative (CPI) was held in July 2010. The meeting witnessed a key step towards the development of children’s safety agenda with the signing of a letter of commitment by Egyptian ISPs to combat through self-regulatory measures inappropriate images of children and other forms of child exploitation on the Internet.

C. Privacy and data protection

Egypt has cybersecurity related articles within the following laws: 1) Law 10/2003: the comprehensive Telecommunications Act, and 2) Law 15/2004: The E-Signature Law. In addition, the IPR law (Law 82/2002) and the Comprehensive Child Law (2008) include articles that deal with cybercrimes in their respective domains. There is a draft law on cybercrimes and personal data protection that is being finalized. There is a national cybercrime unit at the Ministry of Interior, a national Cybersecurity Committee and a national Child on-line Protection Committee at the MCIT. These entities provide guidance and guidelines to the relevant parties and to the general public.

D. Countering misuse of ICTs

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. A national Computer Emergency Response Team (Egypt-CERT) is currently being formed and the team has already received international specialized training and are undergoing high-level exams allowing them to compete with international standards. The CERT will provide rescue to any data breaching that succeeds in breaking through the PKI especially in critical sectors such as the financial sector. In addition, a national Cyber Security Council and a Critical Information Infrastructure Protection Task Force are being established. It should be noted that the percentage of e-crimes in Egypt was lowered by 60%¹⁴.

¹⁴ <http://www.mcit.gov.eg/NewsDetails.aspx?id=7ibO9z3SNgQ=>

VI. Enabling Environment

A. Legal and Regulatory Environment

The Telecommunications Act (Law 10/2003) calls for liberalizing the telecoms sector under the oversight of NTRA. The law aimed to bring Egypt into conformity with the World Trade Organization (WTO) Basic Telecommunications Agreement (BTA). The law called for the establishment of NTRA, which took place in 2003 as institutionally separated from MCIT. It is important to note that as part of the regular assessment of the policies to cater for the changes taking place in the telecom sector globally and to adapt to the local needs, the framework of the Telecommunications Regulation Act was later extended through a number of secondary legislations and ministerial decrees and based on the Egypt country analysis conducted as part of the EU New Approaches to Telecommunications Policy II (NATP II) in December 2006. NTRA is responsible for all aspects of licensing, numbering, interconnection, universal service, consumer rights, management of the frequency spectrum, regulation of imports and the manufacturing of telecom equipment. In the interim a number of new laws were passed to help develop a legal framework for liberalization, including the Investment Law (13/2004), the Electronic Signature Law (15/2004), the Tax Reform Law (91/2005) and the Antitrust Competition Law (3/2005). The Telecom law also called for an end to TE monopoly on fixed-line services by the end of 2005 and the MCIT announced in May 2007 that a second fixed-telephone license would be to put an end to state-owned TE monopoly over the voice-telephony market, but the second license issuance was delayed due to the difficult nature of the current global economy.

Egypt has been applying protection for Patents since 1949 (under Law No. 132/1949) with the definition of patentability provided by the Convention of Paris. A new Egyptian legislation for protection of intellectual property rights was issued in 2002 (Law No. 82/2002). The law was issued in order to protect the rights of software companies and fight software piracy as it stated that every software company has to seek a license to Record & register original computer software and D/Bs. The government is currently enforcing the intellectual property law and is applying the jurisdictions of criminal law on violators in order to provide a fair and competitive setting for the industry. One recent market driver has been a significant fall in software piracy, where Egypt's piracy rating has dropped from 69% in 2003 to 59% in 2009 according to the seventh annual BSA and IDC Global Software Piracy Study.

A result of the fierce competition among the three mobile operators in Egypt was that some distributors sold phone lines without obtaining users' personal data, or registered new lines using incorrect data. The National Telecommunication Regulatory Authority, aware that unregistered lines facilitate certain criminal activities, has cooperated with the Communications Police to carry out regular inspections of distributor outlets to prevent this occurrence.

In addition, the NTRA issued a new regulation for the registration of consumers' personal data in operators' databases whereby, from May 2010, operators would be required by law to gather a defined set of data for all lines sold. The new policy states the following:

- The mobile lines available at distributor outlets are to be inactive, permitted only to make calls to the operator call center.
- On buying a mobile line from operator-authorized distributors, customers must sign a contract that includes their personal data (according to their national ID card). Operators are required to obtain a copy of customers' national ID cards after verification of the buyer's identity by the distributor.
- Buyers are required to call the operator call center using the new line to activate it. Operators must verify buyers' personal data as registered in their database before activating new lines.

- With regard to lines sold previously, mobile operators shall review the personal information recorded in their databases in order to correct, update and complete their data as required.

NTRA announced in 2010 a plan to lengthen mobile numbers from 10 to 11 digits by adding an extra digit to the code of each mobile operator. This decision will allow for the creation of new mobile numbers as the existing system approaches full capacity.

It is the core mission of NTRA to spread a culture of rights and duties within the ICT sector. The authority works to consolidate relations with civil society organizations in support of efforts to raise consumer awareness of various telecom services. Within this framework, NTRA has launched a nationwide awareness campaign under the slogan "Know Your Rights." Since the first campaign conference was held in Suez governorate in November 2009, subsequent conferences were held in the governorates of Suez, Qalioubiya, Luxor and South Sinai in January 2010, and in Port Said and Damietta in November 2010.

B. Domain Name Management

Three Egyptian companies – TE Data, Vodafone Data and Intouch (owner of Link) – have been licensed by NTRA as registrars for the Egyptian ccTLD .miser. Registration of Egyptian domain names in Arabic can be carried out through any of these companies. NTRA will also be granting the Egyptian Universities Network (EUN) a license to provide governmental, academic and educational entities Arabic domain name registration services.

C. Supporting measures

MCIT has collaborated with other stakeholders in carrying several initiatives and projects to further develop the ICT sector in Egypt as well as in establishing institutions to carry out specific objectives.

Green ICT Strategy

With the aim of better utilizing the potential of ICTs to reduce the adverse impact of the ICT and other sectors on the environment, MCIT and the Ministry of State for Environmental Affairs signed a protocol initiating the Green ICT Strategy. This strategy, which focuses on the direct, indirect and systemic environmental impact of ICT, comprises three programs that include; raising awareness of green ICT, electronic waste management and ICT solutions for a more sustainable future.

Export IT Program

The Export IT program, launched by MCIT in February 2010, is an export rebate program run by ITIDA to help Egyptian companies increase their exports from IT products and services and minimize the impact of the recent economic downturn. The program aims to benefit exporting Egyptian IT companies and was designed based on the needs of the industry. The program also emphasizes collaboration between sector stakeholders and policy implementers. Rebates provided through the program are 10% on IT service and software products/services, granted on the value-added component only, excluding cost of goods sold (material costs, software licenses, etc.), with a ceiling rebate of \$500,000 per company per year. The grants applied to payments received for exported products or services during 2009. Companies seeking to benefit from the program must be Egyptian-owned and headquartered in Egypt, with at least 80% of their payroll based in the country.

VII. ICT Applications

A. E-Government¹⁵

The e-government portal is continuing its effective role in providing services for individuals, businesses, and foreigners. Currently the number of services is increasing and the type of service is witnessing remarkable improvements. A number of services is available on the Website with the provision of e-payment facility. In addition to this, the documents necessary for accomplishing Government services are available for download. In order to encourage citizens to use the Website, a new initiative by the government was to organize a contest between users that rewards them as they use the website more frequently. The services provided by the e-government include digital assists repository, land transportation services, traffic attorney and vehicle licenses services, as well as online services for businesses like Qualified Industrial Zone services and environmental services. Furthermore, the e-government offer online services to foreigners such as Egypt airline ticketing services and cultural services. E- Government solutions include:

Automation of Authentication Offices Project

During 2010, the third phase of the Automation of Notarization Offices Project, which started in 2009 and is scheduled to end in 2011, included the automation of 50 new offices, bringing the number of offices that have been automated to 100. Training has been provided to 1,174 employees and new services are currently being developed to facilitate transactions for citizens, with a central database enabling copies of legal documents to be obtained and inquires made at offices other than where cases originate. The automation of notarization offices began with a pilot project involving four offices. As a result of the reengineered workflow and automation of the notarization cycle, processing time was improved by 70%. The project's success is evident in the huge increase in the average number of transactions carried out by notarization offices each month, which rose from 1,800 at the time of the project's launch in 2004, to 96,312, in 2010. The average transaction time has also been drastically reduced, from an average of 40 minutes per person in 2002, to 10 minutes in 2010.

Automation of the Central Laboratory for Veterinary Quality Control of Poultry Production

A cooperation protocol was signed by MCIT and the Ministry of Agriculture in June 2009 regarding automation of the Central Laboratory for Veterinary Quality Control of Poultry Production (CLQP). The project aims to increase efficiency, speed up response time and raise productivity at CLQP through the automation of business workflow. In 2010, an information center was established at the main CLQP laboratory and connected to seven branches. A geographical epidemiological survey of poultry farms in Giza and Sixth of October governorates has been completed, and by 2011 the map will cover the entire country. Upon completion, the survey map will enable users to identify and locate poultry farming activities around the country through geo-positioning devices.

Tamayouz Center

The Tamayouz Center was established by MCIT and the Cairo Chamber of Commerce, representing the Ministry of Trade and Industry, to facilitate the establishment of new commercial activities. The center allows potential business owners to complete the documentation, registration and licensing procedures required by various authorities in a single place and in a timely and transparent manner. MCIT provides the project infrastructure, comprising a portal, servers, computers and local area networks, as well as a secure wide area network connecting Tamayouz with all the authorities offering services through the project.

Automation of Chambers of Commerce Project

Automation of Chambers of Commerce Project is automating the workflow of the Chambers of Commerce and introducing decision support systems to the Federal Union for Chambers of Commerce in addition to

¹⁵ www.egypt.gov.eg

laying down the necessary infrastructure (PCs – LAN – Internet connectivity). The project also provides training for employees in all the Chambers of Commerce on how to use the new systems.

During 2010, MCIT's Infrastructure Support for Chambers of Commerce Project continued, with 26 information centers of the General Federation of Chambers of Commerce and Chambers of Commerce equipped with computers and local area networks, and the establishment of a secure wide area network linking chamber information centers with the project management unit at the Trade Information Center. The Trade Information Center was equipped with a central database, which now contains over 1,400,000 records, and the servers and other systems necessary for data warehousing, as well as two training units. The project has also developed a web portal for the federation. The Chambers of Commerce project addresses two of MCIT's highest priorities: ICT infrastructure development and support for sectoral development, particularly in government and commerce. The project is designed to improve the interconnectivity and automation of the many Chambers of Commerce and their local branches around the country. The project has introduced decision support systems to the Federal Union for Chambers of Commerce and is providing training for employees in all Chambers of Commerce on how to use the new systems.

Cooperation with the Public Prosecution Office

In January 2010, MCIT signed a cooperation protocol with the Public Prosecution Office (PPO) launching a three-year project to develop and modernize the PPO's operations. This cooperation supports strategies to boost the quality of public service provision, improve the performance of governmental entities and modernize judicial services for the benefit of both Egyptians and foreign nationals. The project includes support of data centers at PPO branches in Cairo and Alexandria, the development of database systems, technological infrastructure, network administration and secure means of transferring information at PPO branches, and the introduction of applications for the Criminal Prosecution Office Project through the Criminal Justice Management Project in North Giza. As part of the project, an archiving system for marriage and divorce certificates was set up at North Cairo Court, South Cairo Court and the North Giza Court Office for Family Affairs, allowing for immediate retrieval of documents. The decentralized system, which currently holds 4 million certificates, will be improved with the establishment of a central system that allows documents to be retrieved from any family affairs court. MCIT will also help establish an International Computer Driving License training center for the PPO and provide specialized training on the programs required for its operation.

The National Project for Automating Corporeal Land Registry

Along the MCIT strategy to widespread the ICT in all fields, the national project for automating corporeal land registry establish a system for the electronic registration and the mechanization of the ownership transfer of agricultural land. The project aims to simplify procedures and improve services to citizens and raise the efficiency and accuracy of reports and statistics on the performance of the registry offices. The project is divided into two major stages: The first stage: construction of a specific database of records and another one for the geographical distribution of agricultural land and the integration between them. The second phase is to build a specific design of a system for automating the work and ensure quality and optimal use of the possibilities available for the real estate registry office. The project has led to the creation of an ownership instrument that allows landowners in Egypt to receive a legal title certificate containing geographical and legal data. A new cadastre, containing digitized cadastral maps, has also been introduced, and land registry offices have been upgraded in a number of governorates.

So far, the database holds 5 million real estate documents and 138,000 digitized maps for 19 governorates – Assiut, Aswan, Beheira, Beni Suef, Damietta, Daqahliya, Fayoum, Gharbiya, Giza, Ismailiya, Kafr Al Sheikh, Menoufiya, Minya, Port Said Qalioubiya, Qena, Sharqiya, Sohag and Suez. During the second phase of the project, additional governorates will be incorporated into the scheme and more land registry offices upgraded.

B. E-business

While e-government applications facilitated the use of many government services that are related to business through the internet, it should be noted also that the Egyptian business community is increasing its reliance on ICT applications in business. This is a trend that is growing over time while business people are witnessing the benefits of ICT applications in facilitating and increasing the value of their operations. According to the private sector survey done by the Information Center of MCIT in 2010, about 77% of large Egyptian businesses have websites, which means they are likely to have a wider client base and more knowledge of market of their activities. Egyptian exporters are relying more on web portals to exhibit their products and access external markets. According to the survey, 47% of the enterprises use the Internet for providing customer service and 19% use it to deliver products online.

C. E-Learning

Most of the preparations for the e-learning curriculum (authoring, management and delivery systems) and technology infrastructure on which to run the life long learning track are handled by the e-Learning Competence Centre (eLCC), a partnership between MCIT and Cisco. The e-Learning Competence Center (ELCC) was established to contribute to Egypt's economic growth and global competitiveness through the enhancement of workforce skills and competencies utilizing practical, state-of-the art e-learning and human resource development tools and techniques in accordance with the evolving needs of the government and the business community.

In April 2010, the ELCC received the Cisco Networking Academy Award for its large-scale deployment of a national delivery network for e-learning in the Middle East and Africa. The ELCC received this award in recognition of its scalable, innovative and impactful use of technology in education, and for establishing a network of 700 academies spread over Egypt and delivering training courses for almost 60,000 trainees and 3,000 instructors and administrative assistants. The ELCC partners with the Global Entrepreneurship Program (GEP). In the framework of the ELCC-GEP partnership, the ELCC is developing GEP Egypt's Egypt Entrepreneur Network portal to support and promote entrepreneurship.

In April 2010, the ELCC participated in the Entrepreneurship First Symposium, held in Abu Dhabi in support of the US Presidential Summit on Entrepreneurship held in Washington, DC. On the sidelines of the symposium, the ELCC signed a memorandum of understanding with Knowledge Horizon, the organizer of the event and a leading international knowledge transfer organization, to disseminate proven e-learning practices and leverage e-learning technology to deliver wide access and scalable entrepreneurship education to citizens of the region. In July 2010, MCIT, Luxor Governorate and the Heliopolis Association's Schools Development Project signed a cooperation protocol to establish and accredit e-learning centers at middle and high schools in the governorate of Luxor. The centers, to be managed by the ELCC, are being set up and accredited in two phases: 13 middle, high and technical high schools in Luxor City; and middle and high schools in the cities of Armant and Esna. In August 2010, the ELCC signed an agreement with the Asdaa Association for Serving the Hearing Impaired to empower adults affected by hearing loss as productive, independent and self-reliant citizens through technical and entrepreneurship training programs.

In November 2010, the ELCC organized a one-day symposium as part of the Global Entrepreneurship Week at Smart Village Convention Center to present possible uses of the new and most promising Web 2.0 and social media networks to empower entrepreneurs. The symposium included a multi-stakeholder dialogue on innovative educational approaches and creative solutions that help promote entrepreneurial skills, facilitate the creation of new ventures and develop the entrepreneurial ecosystem. In partnership with a number of specialized organizations, the ELCC designed a web communications program that harnesses the power of web communications, social media and Web 2.0 for business and helps entrepreneurs, business executives and technical professionals to build, maintain and enhance their online presence, generate online traffic and

streamline their online marketing, advertising and public relations efforts. The program also demonstrates how to leverage social media networks and platforms for company success.

NTI and ITU Cooperate in the Field of Distance Learning

In 2010, the NTI provided and managed the first distance-learning program for telecom policies in the Arab world. A continuation of cooperation between the NTI and the International Telecommunication Union, this program served to reinforce Egypt's role in the provision of specialized ICT training in Arab and African countries and to affirm the NTI's status as a regional consulting firm and center of excellence. The program catered for 21 trainees and specialists from Egypt, Jordan, Libya, Morocco, Palestine, Sudan and Tunisia. The interactive training process, designed by the NTI's Distance Learning Center, took the form of interactive e-pages and other multimedia resources accessible to instructors and trainees through the NTI website.

On a national level, there are several programs operating to address the issue of e-learning centres at the higher education level. One of them is the Egyptian E-learning University (EELU), a private non-profit University established in August 2008 to provide distance education through 24-hour online learning with a vision to be a leading university providing e-learning nationally, regionally, and internationally. Also, in November 2010, Nile University (NU) signed an agreement with the El Sawy Culture wheel according to which the two organizations will work to promote a learning culture and raise awareness of issues of importance to Egypt, the region and the world at large. NU has currently more than 400 post graduate students and over 150 researchers and research assistants who have produced during no more than 4 years 250 researches that provide value to the IT industry in Egypt. In addition, there are several universities offering e-learning programs in partnership with Egyptian universities like; the Arab Open University, the Mediterranean Virtual University and the Avicenna Virtual Campus.

D. E-Health

Information and communication technologies have the potential to revolutionize the delivery of healthcare services, from videoconferencing capabilities that link rural areas to urban teaching hospitals to the computerization of health records and pharmaceutical databases. The government has made e-health a cornerstone of its ICT development strategy.

Women's Mobile Health Unit project

In October 2007, the Women's Mobile Health Unit project was inaugurated. Mobile units provide women over the age of 45 with mammograms for the early detection of breast cancer, and test blood pressure and blood sugar levels. The project includes a high-speed communications network, mobile units equipped with advanced medical equipment, and fixed units linked to Cairo's Kasr Al Aini hospital. The Women's Mobile Health Unit project has four units which are to expand to six units in 2011. In 2010, the project expanded to cover seven more governorates, with target coverage of 1.3 million women. It is planned to add a further six governorates in 2011, with target coverage of about 2 million women, and another five in 2012, with a target population of about 1 million women. In 2010, Egypt received special recognition at World Summit on the Information Society meetings for its work in the field of ICT applications, particularly its e-health program. Egypt's Women's Mobile Health Unit Project was showcased in the WSIS Stocktaking Platform and by the International Telecommunication Union.

The National Network for Citizen Health Treatment

The National Network for Citizen Health Treatment is the result of a joint project between MCIT and the Ministry of Health. The first phase, completed in May 2010, involved the automation of administrative processes related to free medical care and the linking of the main center to 75 remote sites spread across the

country. As a result, delays in treatment authorization and payment are minimized. The second phase of the project, started in August 2010, involves the building of a data mining system that can be accessed from 130 remote sites.

Hospital Automation Program

MCIT and the Ministry of Health (MOH) are working under the e-health program to automate and develop the business cycle for patients/beneficiaries in the outpatient clinics of general hospitals and in health insurance clinics. This automation project derives benefit from the use of virtual medical records, which allow patients to receive service anywhere, at any time, and track their medical records and history. The project was initiated in December 2008 as a partnership between MCIT, MOH and the Health Insurance Organization (HIO) to automate 40 clinics. By the end of 2010, the project had automated five HIO polyclinics and eight MOH general hospital outpatient clinics.

In April 2008, MCIT initiated a pilot project to fully automate administration in designated hospitals in order to improve service provision to the public and support decision-making. The project includes the establishment of a comprehensive database of electronic medical files for every patient. The pilot phase covers the automation of three public hospitals: two in Cairo and one in Suez. In 2010, automation was completed at Cairo Fatemic Hospital and Sheikh Zayed Specialized Hospital. Three more hospitals– Aboul Reesh Children's Hospital, Suez Health Insurance Organization Hospital and the critical care unit of Qasr Al Aini Hospital - are currently in the trial operation phase. The project has been expanded to include four hospitals affiliated to Alexandria University, currently in the development phase, and to cover more health insurance, educational and university hospitals between 2011 and 2013.

Egyptian Ambulance Organization Projects

MCIT and the Egyptian Ambulance Organization (EAO), in cooperation with MOH, have been working since 2008 to enhance the quality and response time of ambulance emergency services. Since early 2010, efforts have been under way to fully automate the EAO on two tracks: service enhancement and back-office projects. On the first track, a project was launched in 2008 to outsource the EAO's telephone response to a call center providing specially trained staff 24 hours a day. This service is currently operating in 15 governorates. Additional projects started in 2010 and in the implementation phase cover the command and control room, automatic vehicle location and ambulance fleet management. Projects started in 2010 on the second track cover content management, human resource management and enterprise resource planning.

Management of Hospital performance

In early 2009, MOH turned to MCIT for help in designing a system to monitor hospital performance. The resulting hospital performance management system is based on the collection and analysis of a defined set of key performance indicators (KPIs) designed by reputable international consultants in the field of e-health. Hospital staff enter patient data into online or offline forms. The system server, hosted by a third-party data center, consolidates the data, calculates KPIs across each hospital, and automatically posts the data on a portal where MOH officials can see it. Individual hospitals are also able to monitor their performance. This ongoing project allows officials at MOH to closely monitor the performance of public healthcare facilities and to provide better services for citizens. The system is expected to help lower both mortality rates and healthcare costs.

Integrated ICT for Health – Siwa Oasis

The Integrated Program to Develop Siwa Oasis Using ICT, which was designed as part of ICT-TF, was a finalist in the health category of the 2010 Stockholm Challenge, and could also win the first ranking in the Arab Gulf Program for Development's International Prize 2010. The program established a telemedicine link connecting Siwa Central Hospital to Shatby Children's Hospital in Alexandria to provide telemedicine and

remote diagnosis in pediatrics in partnership with the World Health Organization. In addition, seven doctors from Siwa Central Hospital have been trained in remote-diagnosis procedures, e-medical learning and use of the installed software for diagnosis, and three medical staff have been trained to operate the teleconsultation system. Fifty children benefited from teleconsultation services in the first two months of operation. The program goes beyond technological infrastructure to examine the training needs of the large pool of healthcare professionals in Egypt. The National Healthcare Capacity Building Project seeks to create highly qualified and competent doctors, nurses, technicians and administrators capable of designing and implementing world-class health systems and programs. The project provides training in basic IT skills, biomedical awareness and biomedical informatics.

National Cancer Registry Program of Egypt Portal (NCRPE)

The program utilizes state-of-the-art data mining technologies to extract a variety of health indicators for investigating reasons behind the spread of cancer. As an initial phase, the city of Aswan was selected to be enlisted in the program. A fully equipped data collection center was prepared to be ready to receive all patients' data to be registered using the latest data mining and recording applications. A high-end data transfer application was also developed to transfer patient's data to the National Cancer Archive. The NCRPE registries routinely collect data on patient demographics, primary tumor site, tumor morphology and stage at diagnosis, and follow-up for vital status. NCRPE data will be available for researchers, clinicians, public health officials, legislators, policymakers, community groups, and the public. NCRPE portal guides all registries to achieve data content acceptable for pooling data and improving national estimates. We developed computer applications to unify cancer registration systems and to analyze and disseminate population-based data.

TeleMedic@Egypt

TeleMedic@Egypt is an e-health project to connect high-level healthcare resources available in large cities with low-level healthcare facilities in underserved and remote regions. The project will also develop a roadmap for telemedicine implementation in Egypt. The project, which began in 2009, is implemented by the Information Technology Institute in coordination with the Holding Company for Biological Products and Vaccines (VACSERA), the Fraunhofer Institute for Biomedical Engineering (Germany), University of Birmingham (UK) and the Technical University of Crete (Greece). The project is funded by the EU-Egypt Innovation Fund's Research, Development and Innovation Program and operated in cooperation with MCIT, the Ministry of Health and the World Health Organization.

Finally, projects involving promoting e-health extend beyond availing applications and infrastructure to capacity building in that area. Based on a memorandum of understanding signed by the Information Technology Institute and the Ministry of Health in December 2009, ITI and the Ministry of Health Fellowship Board established the Health Informatics Fellowship. The program aims at educating and training healthcare stakeholders in health informatics concepts and best practices. Through this program, ITI aims to close the gap between healthcare needs and ICT capabilities.

E. E-employment

Already, the ICT sector has created a new base of business opportunities and, in doing so, has opened up a large number of employment opportunities, particularly in the outsourcing and offshoring industry. Outsourcing is one of the main rising sectors that offer e-jobs. In terms of direct jobs, outsourcing activities could create 300-450 thousand direct jobs for Egypt and 800-1200 thousand indirect jobs by year 2017.

MCIT is working to ensure a ready supply of suitably trained human resources through various qualification and development programs. The ministry currently runs 25 human capacity development programs in ICT and related fields. Cairo Contact Centers Park, a newly inaugurated technology zone on the outskirts of

Cairo, is expected upon completion in 2014-15 to offer 40,000 ICT-related work opportunities and 100,000 additional work opportunities. In 2010 about 205 thousand people worked directly in the ICT sector.

VIII. Cultural Diversity and Identity, Linguistic Diversity and Local Content

A. Use of ICT in support of cultural and linguistic diversity

The information available online about Egypt's natural and cultural heritage is now very extensive and of a very high quality, thanks to CultNat, which was awarded an international prize at for the best e-content practice at the World Summit Award, held on the sidelines of WSIS 2005.

MCIT is giving ongoing support to the creation of a database and digitization of the holdings of the National Archive of Egypt (Dar Al-Watha'iq). In addition to this, a new area of cooperation has opened between MCIT, Cairo Governorate and CultNat. This will document the governorate's cultural aspects by upgrading Cairo's geographic information database to include an investment map of Cairo, a tier on antiquities, historical sites, special natural sites, traffic networks, open and green spaces, and other projects that serve to enhance operations in this field. The agreement includes documenting Cairo's architectural and artisanal heritage, in addition to compiling information for Cairo to be uploaded to the Organization of World Heritage Cities website.

CultNat is also involved with MCIT and Luxor City in creating replicas of Luxor's temples in a project called Little Luxor, along with another called Culturama, emphasizing Luxor's heritage and tourist attractions. A partnership between CultNat and IBM created Eternal Egypt, which combines the most important locations, artifacts, people and stories from Egypt's history into an online interactive multimedia experience. Three years in the making, the project has so far produced multimedia animations, 360 degree image sequences, panoramas of important locations, virtual environments, three-dimensional scans, real-time feeds from webcams and thousands of high-resolution images of ancient artifacts. These all weave together more than five millennia of Egyptian culture and civilization.

B. Local and national digital content development

Most progress has been made concerning content for education, business and culture. Content is being produced by the public as well as the private sector, sometimes in partnership. While the main driver for new content is the demand for different kinds of information and services, governments can help "create" demand by taking various supply-side initiatives that raise the awareness among potential users. Based on the initial work of the MCIT on content development, the number of "hits" recorded by Egyptian e-content rich Web sites is increasing, both from inside and outside of Egypt.

Among the main achievements to date are the Arabic e-Content for Books and Software Initiative; mobile content development; cultural and educational content development; e-government content; e-commerce content; content for the general public; and the use of Arabic domain names.¹⁶

The Arabic e-Content for Books and Software Initiative is a partnership between the MCIT, the Egyptian Publishers Union and the E-Learning and Business Applications Union. Under this initiative, the focus of the Government's efforts has been on encouraging publishing houses to digitize their content. After a lukewarm initial response, publishers have begun to see opportunities from content digitization. The MCIT has encouraged publishers of Arab content to publish online and has given them incentives to do so. The MCIT has also overcome concerns of the publishers regarding intellectual property rights (IPR). MCIT has partnered with "E-Labs", an NGO, to develop a business model that would encourage publishers to publish

¹⁶ See http://www.mcit.gov.eg/ICT_e-Content_1.aspx.

their books online. A digital platform has been developed allowing digital rights management to secure and protect their intellectual property. As a result, at least 70 publishers now participate in an initiative aimed at making digitized content available for online delivery.

Various public institutes and private companies as well as 17 universities in Egypt are engaged in the development of e-content, including animations, for educational purposes. A unified university library catalogue (containing at present over four million bibliographic records, including all these), using customized software, is being created and compiled into a digital library.

Under the umbrella of concern to communicate with the global tourism market and international competition, which move strongly to the e-tourism, which has become an important role in global economic growth, that entered a new phase of its main e-business. Cooperation between the MCIT and Misr Company for sound, light and cinema, sound and light portal was developed and launched in three different languages; Arabic, English & French. The portal aims primarily to serve the tourism in Egypt by attracting the largest number of tourists to visit these shows in the arms of the Egyptian civilization it allows visitors to identify the shows and gives the possibility of reserving tickets for the shows, buy souvenirs and pay through the Internet through e-Payment engine using different credit cards, it answers any questions about these shows- dates or languages of the show and ticket prices contains an extensive photo gallery for the various archaeological (the pyramids - Abu Simbel - Karnak - fila - Edfu ...) and a full database for heritage films and lighting projects implemented by the company encouraged investment opportunities through the presentation of investments available both on the role of cinema or sound and light new projects, company news and concerts and its calendars it allows communicating with patrons whether individuals, companies or international tourism companies through newsletter and receive their opinions and suggestions that are carefully studied through decision-makers in the company. We also can communicate with different groups of sites through the face book and the you tube and the twitter.

C. ICT software, tools, and R&D programmes in Arabic language processing

MCIT has served as a catalyst to bring together industry, researchers, international experts and other public and private stakeholders to develop virtual organizations in which national and international researchers collaborate across disciplines on relevant and potentially competitive long-term projects. The centers act as pre-incubators by identifying research.

One of the first centers to be established was the Data Mining and Computer Modeling Center of Excellence (DMCM). Launched in 2005, the center is currently conducting research on data mining and computer modeling in the tourism, health, oil and gas sectors, Arabic text, and e-content mining. DMCM's research team is looking at using natural language processing technologies to mine unstructured and structured electronic texts in Arabic and English and develop mining agents that learn from experience.

In addition, Cairo Microsoft Innovation Center (CMIC) is a project implemented in cooperation with the MCIT as part of Microsoft's incubation of innovation. It effectively adds to the development of Egypt's ICT innovation as it focuses on the applicatory researches in collaboration with Egyptian research centers and different ICT associations. The unique center gives special attention to some advanced researches like data extraction, parallel computing and network services for mobile platforms. For example, the information retrieval project is a CMIC effort to measure, analyze and enhance Web Search in Arabic. It involves collecting and mining search log information and user feedback, prototyping several enhancements particularly targeted towards Arabic searchers and conducting scientific user studies in the region. Another project is

The image-based search, which aims at directly searching within digitized images of book pages rather than searching the OCR resulting text. The image-based book search process has the advantage of being language independent, hence readily extendable to other languages such as the Arabic language.

D. Arabic domain names

In June 2010, the first Arabic country code top-level domain (ccTLD) – .mizr (in Arabic characters) – was added to the Internet root zone. Registrations under the Egyptian domain .mizr were the first Arabic domain names on the Internet. Egypt was the first country to apply for a non-Latin ccTLD within the fast-track process, which currently, according to the Internet Corporation for Assigned Names and Numbers (ICANN), has a total of 21 requests representing 11 languages. The launch of Arabic domain names, which can be considered a milestone in the history of the Internet, followed ICANN's approval of Egypt's request to sign up for the first non-Latin domain name. This is no doubt a major achievement that should open new ways to expand e-services, boost the number of online users and enable Internet services to penetrate new market segments by eliminating language barriers. By allowing the localization of domain names using Arabic scripts, it is predicted that the reach of the Internet will increase. Arabic language speakers will have greater access to content in local languages and of local relevance. Companies and governments will be able to reach larger segments of the market and of the public. This should allow the creation of local Internet domain name markets. It is also expected that search engines will focus more on localized searches.¹⁷ There will be more domain names to choose from and local branding will be made easier.¹⁸

This opened the door for other countries using non-Latin scripts to request ccTLDs in their official languages. Arabic domain names support the Arabic e-content industry, which opens new investment fields for Egyptian and Arabic companies, and helps maintain the identity of younger generations. Arabic domain names also allow new segments of the population, who are not familiar with English, to use the Internet.

IX. Media

A. Media Independence and Pluralism

MCIT began exploring the impact of converging media in 2005 and is currently developing policies to support interoperability between various forms of communication. The ministry held a number of regional seminars in 2007 and 2008 on the convergence of ICT and the broadcasting industry to examine issues such as the need for a unified interface capable of supporting services across various types of delivery network as well as new standards and protocols that support multiple media services and the necessity of developing a legislative, investment and regulatory environment that will support converged media services.

B. The media and its role in the Information Society

The role of media integrated with ICT is becoming increasingly vital in today's Egyptians' life, as it is an important contributor to freedom of expression and plurality of information. It is shaping the political life in Egypt in the new era.

The convergence of printed, audible and viewed media has given rise to the phenomenon of electronic journalism. A consequence of the extraordinary development of ICTs, electronic journalism came into existence as researchers and journalists worked to produce electronic newspapers that combined the functions of printed newspapers with additional functions dependent on new technologies. The Internet now supports a diverse electronic press, with news websites and portals maintained from around the globe.

¹⁷ Desai, A. 2009. *Impact of ICANN's decision to allow domain names in local languages*. GigaThoughts., Nov. 20, 2009. <http://www.gigathoughts.com/technology/impact-of-icann%E2%80%99s-decision-to-allow-domain-names-in-local-languages.html>

¹⁸ Al-Shagra, A. F. 2010. *5 reasons Arabic Top Level Domains Will be Good for Arabs*. May 7, 2010. TNW Middle East. <http://thenextweb.com/me/2010/05/07/5-reasons-arabic-top-level-domains-good-business/>

In 2010, MCIT and El Tahrir Printing and Publishing House cooperated to develop the institution's press publications. This cooperation covered automation of the journalistic work cycle at *Al Gomhouria* newspaper and the development of a hotline to help citizens. Through this hotline, citizens can relay their problems or complaints to the newspaper, which covers them in the form of a news story or appeal and also relays details to the relevant government officials. This project, forming part of the Arabic e-content initiative launched by MCIT in 2005, aims to preserve and enrich Arabic heritage for future generations through the development of digital content and the provision of social services that promote Egyptian culture locally and internationally.

Within the framework of the Arabic e-content initiative, MCIT and Al-Ahram Foundation signed a memorandum of understanding concerning development of the Al-Ahram web portal. Establishing a stronger web presence is important for Al-Ahram as in the last five years the growth in online media has led to a significant decrease in sales of printed newspapers, as well as the advertisements they contain. This cooperation project comprises three tracks, covering classified ads, mobile access and Internet radio. The first track was designed to create a classified ads website for Al-Ahram, supporting both Arabic and English, to simplify and speed up the entire ad cycle, through planning, ordering and processing. The second track involved putting in place a mechanism to adapt the content of the Al-Ahram web portal for mobile devices. Al-Ahram's mobile portal is now up and running. The third track concerns the establishment of an Internet radio station for Al-Ahram that enables listeners to interact not only with the station but with each other. This station is seen as a means to extend the newspaper's market, and boost interaction with readers, at a time when many are shifting from print media to online media for news content.

C. Convergence between ICT and the media

Egypt's potential to shift to converged ICT and media is backed by many positive factors; its infrastructure potential, efficient service providers, empowering regulatory framework and availability of content. NTRA in that context is working on facing regulatory challenges such as management of limited scarce resources and promoting technology neutral and simplified set of licensing categories.

Today, Egyptians can follow all kinds of news, TV programs and TV series that are broadcasted via Internet. The Nile Television Network is offering a "watch now" service through its website (www.ntntv.net/WatchNow.aspx).

- I. MCIT partnered with the News Sector of the Egyptian Radio and Television Union (ERTU) to build a news portal “www.egynews.net” to deliver up-to date local, regional and international news in Arabic. The Portal provides the internet users with a variety of information and interactive services; news articles, internet users comments on the news articles, in-depth news reports, newsletters, RSS feeds, voting, live streaming, online seminars, hot cases, alerts, temperature reviews and market reports. The average number of portal visitors per day has climbed from 6,000 visitors/day in Dec 2008 to 21,000 visitors/day in Jan 2010 and currently we have reached an average of 50,000 visitors/day in Feb 2011 and according to Alexa rankings the Portal is in the top 100 websites in Egypt currently we are ranked the 87th website in Egypt from traffic perspective in Feb 2011. NTRA strategy for Convergence includes Converged Services: Voice, Data and Convergence of technology. NTRA encouraged Broadband services on both fixed and Mobile networks ADSL, USB modems, FTTC are sharing the responsibility to carry broadband services to the end user. NTRA is also working on modifying the Telecom Law to include the regulation of of broadcasting services to help develop the integration of both services on different delivery mechanisms to the end user.**

II. International and Regional Cooperation

MCIT prioritizes the establishment and enhancement of relations in the regional and international arenas with the aim of promoting the exchange of expertise, the implementation of mutually beneficial projects and to drive change. Creating and facilitating multi-stakeholder partnerships on the regional and international level has been instrumental in furthering Egypt’s participation on a global level.

A. Financing of ICT Networks and Services

While Egypt is depending primarily on its own financial resources in funding its ICT networks and services it is working closely with international partners for developing and enhancing the quality of ICT networks and services. An example of such cooperation is the fruitful cooperation between TE and Alcatel Lucent – a French company – in developing internet infrastructure through the marine cable TEN.

B. Infrastructure and Development Projects

Egypt cooperates with the EU and with countries in the Euro-Mediterranean region in many different ways, from the passage of international telecommunications cables between Egypt and the EU to partnership agreements, foreign investment, bilateral collaboration and research and development. the EU approved two joint projects with Egypt: MED-IST, designed to identify and assist research organization in Mediterranean partner countries that could benefit from EU-funded research is information society technologies, and MAP-IT, which seeks to facilitate access for EuroMed partners to knowledge and resources on information society-related skills, technologies and competencies in the non-EU Mediterranean area. While MED-IST focuses on research organizations, MAP-IT focuses on the private sector.

Alcatel-Lucent has established several projects in Egypt, like the International Service Center serving more than 120 clients from international companies in 60 countries in MENA and South Asia as well as Alcatel-Lucent University, which offers educational opportunities in R&D and other ICT-related specialties. The company has entered into partnerships with many telecommunication companies and Internet service providers in Egypt like Telecom Egypt, Orascom Telecom, MobiNil, and Etisalat Misr.

The strategic partnership in ICT between Egypt and the United States now includes policy dialogue with the US Federal Communications Commission (FCC) on broadband applications and services; the establishment of a web portal in English and Arabic for the Global Entrepreneur Program, involving the cooperation of Nile University and ITIDA.

On the government level, memoranda of understanding have been concluded between EG-CERT and US-CERT, and MCIT and the US Department of State (on entrepreneurship), in addition to regional trade agreements between NTRA and the World Bank (on broadband), MCIT and the World Bank (on e-waste), and Egypt Post and the World Bank (on postal services).

On the business level, memoranda of understanding have been signed between ITIDA and each of Invensys, Seneca, Stream and Sutherland, and between the ITI and EMC.

In September 2010, Chinese Minister of Industry and Information Technology, held a visit to Egypt heading a Chinese delegation. During the mission a cooperation protocol between ZTE Corporation and the NTI was signed. According to the protocol, ZTE will set up an advanced training and systems research development center at the NTI premises in Smart Village. ZTE will also offer training for NTI engineers and teaching staff at its headquarters in China. Upon completion, scheduled for September 2011, the center will enable the NTI to develop and modernize its training and research systems.

Egypt Post and Poste Italiane signed a cooperation agreement to provide instant money transfer services between the two countries with the lowest possible cost without financially encumbering beneficiaries in Egypt. This service is provided for Egyptian expatriates working in Italy to safely send money to their families all over the governorates of Egypt.

The Enabling Regulatory Environment and Capacity Building for ICT Personnel in Nile Basin Countries project was initiated in 2010 to support African ICT development on two tracks. The first track involves the study and analysis of communication markets in the Nile Basin countries, drawing up an ICT sector map for the region and identification of areas that offer opportunities for Egyptian investors as well as identifying weakness areas. The second track involves the establishment and development of a training program based on Egypt's experience in ICT sector regulation and showcasing the Egyptian ICT market and the companies that work in it.

Egypt, has also cooperated with International Organizations in order to build an Information infrastructure based on robust data and internationally comparable indicators. In that context, several key figures have been reviewed and corrected to reflect the performance of the ICT sector in Egypt, for example MCIT has engaged with the World Bank in projects to review the GDP deflator, the FDI and the exports figures for the ICT sector.

Policies and Impact Assessment:

MCIT has conducted a project with UNCTAD "ICT POLICY REVIEW OF EGYPT". The main objective of the project was to assess the implementation of national ICT master plans by examining how ICT and e-business development issues have been operationalized in country development strategies and identifying policies, initiatives and implementation mechanisms favoring the development of the information economy.

MCIT has cooperated with local and Australian experts to evaluate the economic impact of the ICT sector on the national economy and to identify the forward and backward linkages between this and other sectors. Using methodology employed by the Organization for Economic Cooperation and Development (OECD), the MCIT team developed an input-output table that presents the ICT sector as a distinct sector of the economy. The study shows that if the ICT sector were to stop using domestic inputs then total output would fall by 5.87% while if it stopped supplying inputs to domestic industries total output would fall by 4.42%.

The study also shows that the trade, finance and insurance sectors are characterized by high linkages, both forward and backward, to the ICT sector.

C. WSIS Follow-up

In order to assure the sustainability of the WSIS process after the completion of its Tunis phase, plans have already been put in place to implement a mechanism for the Geneva and Tunis Plans of Action. They will be based upon continuing cooperation between the Egyptian government and all concerned stakeholders, with an aim to achieve the development goals of the Millennium Declaration.

For each action line detailed in the Geneva and Tunis Plans of Action, the Egyptian government intends to bring together the necessary teams of stakeholders to facilitate their implementation. It is intended that the plans are executed hand in hand with UN bodies or specialized agencies leveraging on their expertise, and working where possible within Egypt's existing resources.

Following the second phase of the WSIS, Egypt appreciates that to build an Information Society will require unremitting effort. Egypt is committed to keep fully engaged, nationally, regionally and internationally, to ensure sustainable follow up to the implementation of agreements and commitments reached during WSIS process and its Geneva and Tunis summits. The government and its ministry plans carefully to consider the multifaceted nature of building the Information Society, effective cooperation among all stakeholders, respect for their mandates, and leveraging on their expertise. On a local level, MCIT formed a committee for taking stock of the different projects, programs, and initiatives related to the WSIS action lines. A dedicated webbased database was developed to enable the stakeholders to enter data on projects themselves.

As a result of the importance of the advanced core indicators adopted from the WSIS meetings, Egypt hosted the 7th ITU indicators annual meeting in Cairo in March 2009, the event is considered one of the most important forms of international and regional cooperation with 78 participant countries and remarkable international organizations in the field.

In 2010, Egypt received special recognition at World Summit on the Information Society meetings for its work in the field of ICT applications, particularly its e-health program. Egypt's Women's Mobile Health Unit Project was showcased in the WSIS Stocktaking Platform and by the International Telecommunication Union.

D. Participation in Internet Governance activities

MCIT participated in the fifth annual Internet Governance Forum (IGF) meeting, held in Vilnius, Lithuania from 14 to 17 September 2010. The Cyber Peace Initiative of the Women's International Peace Movement participated in a workshop titled "Advancing Digital Citizenship Aspects in Children's Online/Internet Experiences: Contributing to Internet Governance for Development." On the third day of the event, a workshop titled "Remote Participation in the IGF and in Regional Internet Governance Meetings" was held, in which MCIT discussed how the Internet had become a medium that facilitates communications between stakeholders and how it influenced international politics by increasing the flow of information and participation. The discussion focused on the role of remote participation in multilevel Internet governance processes, increasing inclusiveness in remote participation and the interplay with related processes.

III. Millennium Development Goals (MDGs)

A. Progress towards Achieving the MDGs

Egypt has made sound achievements towards the fulfillment of its commitments towards the MDGs; commitment to poverty alleviation has acquired clear momentum through the explicit adoption of the goal of reducing poverty to 15 percent by 2011/12 in its national Sixth Five Year Socioeconomic Plan (2007-2012). Egypt has already achieved its international commitment of reducing to half extreme poverty based on \$1 per day. Non-enrolment and school drop-out rates remained high in certain areas. It is expected that by 2015 almost all children of primary school age will be in school. Egypt is addressing women's empowerment and has demonstrated its commitment through institutional arrangements, major legislative changes and a large number of initiatives and actions. Egypt's efforts to reduce child mortality are paying off. There have been improvements in maternal health and impressive reduction in maternal mortality ratios and in proportion of births attended by skilled personnel. Egypt has succeeded in combating HIV/AIDS and controlling malaria, while tuberculosis and schistosomiasis are regressing. There is still a challenge in sustaining environmental quality and increasing investments in protection measures. Finally; Egypt has witnessed a rising trend in its ODA disbursements from a variety of rich countries and international organizations, and these have been allocated to fulfill the development needs of different sectors. The share of exports of goods and services in Egypt's GDP has been increasing throughout these years. Egypt's external debt has witnessed stable movement in the last few years, with a decline in the ratio of debt interests to exports of goods and services. The Egyptian ICT sector has been growing fast in the past years especially with the increase in investments directed to it, resulting in more access to landlines and cell phones, along with the extensive use of personal computers and access to the internet.¹⁹

B. Use of ICT for Achieving MDGs

ICT is an anchor in achieving MDGs in the last few years where initiatives of education programs, health and poverty eradication had mainly relied on ICT applications, and as mentioned previously in this document the use of ICT had added more value to the efforts made towards combating illiteracy, improving health and enhance the level of education standards.

Millennium Development Goals (MDGs) are the frame of a vision for the future. Progress over time is measured for each of the eight MDGs through relevant targets and indicators. ITU has been given the mandate to measure one of the targets (make available the benefits of new technologies, especially information and communications) of Goal 8 (a world in which developed and developing countries worked in partnership for the betterment of all) through three main indicators:

- 8.14: fixed telephone lines per 100 population,
- 8.15: mobile cellular subscribers per 100 population,
- 8.16: Internet users per 100 inhabitants.

As follows, we realize Egypt's progress in the three indicators during the period 2000 – 2010.

Year	Internet users per 100 inhabitants	Mobile subscribers per 100 population	Fixed lines per 100 population
2000	1.01	3.45	9.06
2001	1.52	5.23	10.13
2002	8.25	6.67	11.4

2003	10.82	8.45	12.8
2004	11.81	10.92	13.5
2005	12.65	19.11	14.6
2006	13.53	24.76	15
2007	14.24	40.63	15.2
2008	16.68	57.18	15.7
2009	21.68	72.13	13.42
2010	29.47	90.44	12.2

Source: MCIT, 2011

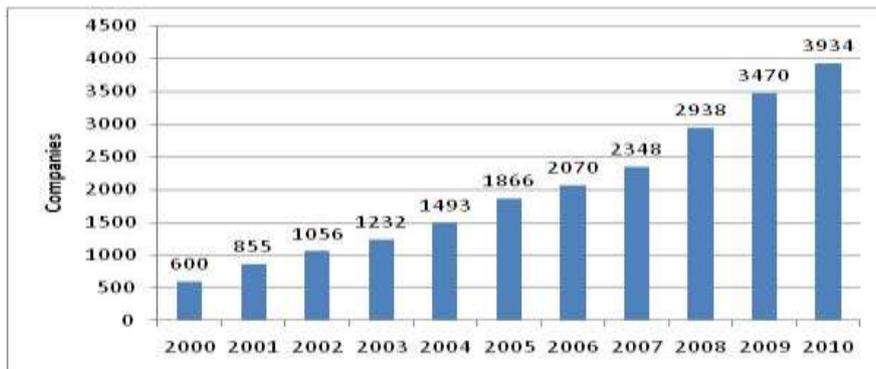
IV. Building ICT Sector

A. ICT Companies

According to the GAFI classification ICT firms are classified into three main categories: Communication firms, IT firms and systems technology services. Also ICT firms include some multinationals such as Satyam an Indian firm for Software Development, Valeo Interbranch Automotive Software Egypt (VIAS Egypt) French firm for R&D and maintenance of Embedded software modules & Systems for the Automotive Industry, ITS the Kuwaiti firm for Remote Management system (RMS) for the offshore outsourcing services and the American Epicor Software Corporation for Software engineering and customer support.

With the presence of several ICT Multinationals, Egypt was able to attract more foreign direct investment (FDI) over the past few years with an estimated figure of USD 1 billion annually²⁰, a trend which is expected to continue with additional innovative incentives planned to be introduced in the years to come.

Figure 6: Number of ICT Companies in Egypt (2000-2010)

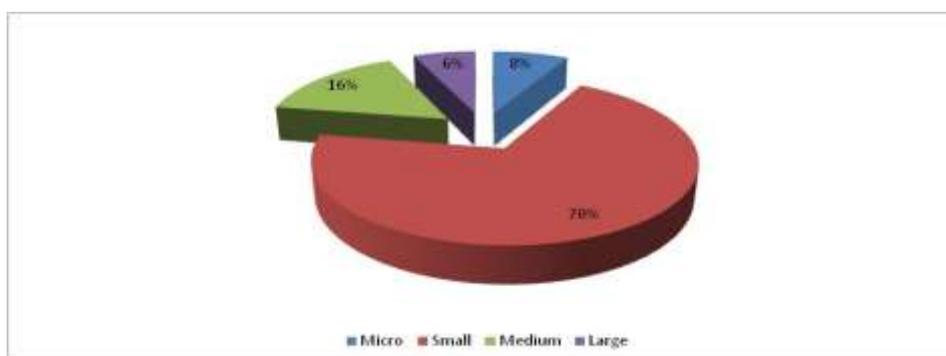


²⁰http://www.mcit.gov.eg/Presentations/DrTarek_Presentation_French_ICT%20community_Dec%20200720071231144954.pdf

Source: MCIT, 2011

The number of ICT companies increased to 3813 at the end of Q3 2010, of which 78% were IT companies, 14% IT-system services companies and 8% communication companies. The number of ICT companies was 14.44% higher than the number of ICT companies in Q3 2009. As shown in figure 7, 70% of the ICT companies in Egypt in 2010 are small companies.

Figure 7: ICT Companies in Egypt by size 2010



Source: MCIT, 2011

B. Government Facilitation

Micro, small and medium enterprises (MSMEs) play a crucial role in the development of national economies. MCIT's ICT for MSMEs program aims to create a more competitive and enabling environment for MSMEs in Egypt. It was initiated in 2006 in partnership with Microsoft, Cisco and ELCC to provide ICT training programs to M/SMEs and Train of Trainer (ToT) programs to NGOs. The project focuses on three business sectors: agro-business (food production and textile), furniture and handicrafts. The project runs awareness programs to encourage the adoption of ICTs in addition to conducting competitions, creating applications for distribution of information via bi-directional mobile devices and managing a program for the impact assessment of ICT utilization by SMEs.

In 2010, in continuation of these efforts, a new partnership with Microsoft was initiated to address labor market requirements and introduce a capacity-building program for MSMEs. The program was selected as a finalist in the Economic Development category of the 2010 Stockholm Challenge. In addition, the program exposes MSMEs to technology to learn from an early stage how best to take advantage of modern ICT tools. The program has prepared 400 trainers through a training-of-trainers scheme, and provided training to 8,500 MSMEs on ICT tools and online SME services.

It also involves the development of an e-market portal (www.siwashop.net) to promote Siwan products online, thereby enlarging the marketplace of MSMEs operating in Siwa. Concerning empowering

entrepreneurs through ICT, 54 Siwan MSME owners have begun marketing their products online through the Siwa e-market portal, which has attracted local and international interest. The establishment of full e-marketing services is now under way, with Siwa Post Office to manage e-payment procedures and product shipping.

Other efforts in supporting MSMEs are exerted by ITIDA. As part of its commitment to the local market, ITIDA launched its Enterprise Capacity Building Program "Grow IT" in cooperation with an international consortium to increase the international competitiveness of 100 Egyptian IT companies that are existing exporters, or who have export potential. Grow IT seeks to empower these companies to successfully handle the development, production and business management processes of products/services that will suit their potential export markets. ITIDA also offers financial support to individual companies wishing to participate in ICT related exhibitions. The "single intervention" program is designed to encourage IT companies to apply for the financial support and gain access to an exhibition that might not witness an Egyptian stand.

C. Contribution of ICT sector in the national economy

The success of the latest ICT strategy (2007–2010) was reflected in the strong and steady performance of Egypt's ICT sector, contributing to the growth of the economy overall. Additionally, the ICT sector's exports have reached USD1.1 billion by the end of 2010, which come mainly from revenue of the Egyptian outsourcing industry, considered an Egyptian success story according to a number of international organizations. Egypt managed to become one of the top five outsourcing destinations in the world in 2010. The number of employees specialized in the outsourcing industry in Egypt has increased from 6000 in 2005 to 33,000 in 2010, generating USD30,000 a year according to 2009/2010 figures. The expansion in technology specialized areas and the growth in IT services' exports have contributed greatly to the remarkable increase in employees. Currently, the Smart Village — the technology flagship of Egypt — alone employs more than 40,000 people and is expected to grow to more than 100,000 by 2015. In addition, the inauguration of Maadi Technology Park is expected to create around 40,000 direct job opportunities and 100,000 indirect job opportunities by 2015. In 2009-2010 the total ICT turnover reached more than EGP 44.75 billion. The total value added of the sector at fixed prices reached EGP 34.6 Billion in the same year compared to EGP 30 Billion in 2008-2009; ICT sector contributed to 4% of Egypt's GDP in 2009-2010. The overall growth of the sector's value added was 12 % in 2009-2010. The sector's growth in 2009-2010 was 5.3% higher than the growth of the total economy. The ICT Real GDP recorded the third highest sector growth rate during the fourth quarter of 2010 to reach 10.2%* while the tourism sector came first with 16.1%²¹ growth rate during the same quarter. It is worth mentioning that MCIT in cooperation with MED have been cooperating since 2007 to revise the ICT sector's output figures, reaching a better methodology and more accurate data; following international standards. MED has started publishing the revised figures since 2007/2008, which constitute a full quarterly series for the sector's output since 2005/2006 till the present.

Building on the above achievements in the ICT sector, Egypt's new ICT strategy for the next four years takes the successes already achieved and breaks through to the next level, providing a strategic roadmap to position Egypt and its ICT industries as a globally recognized innovation hub.

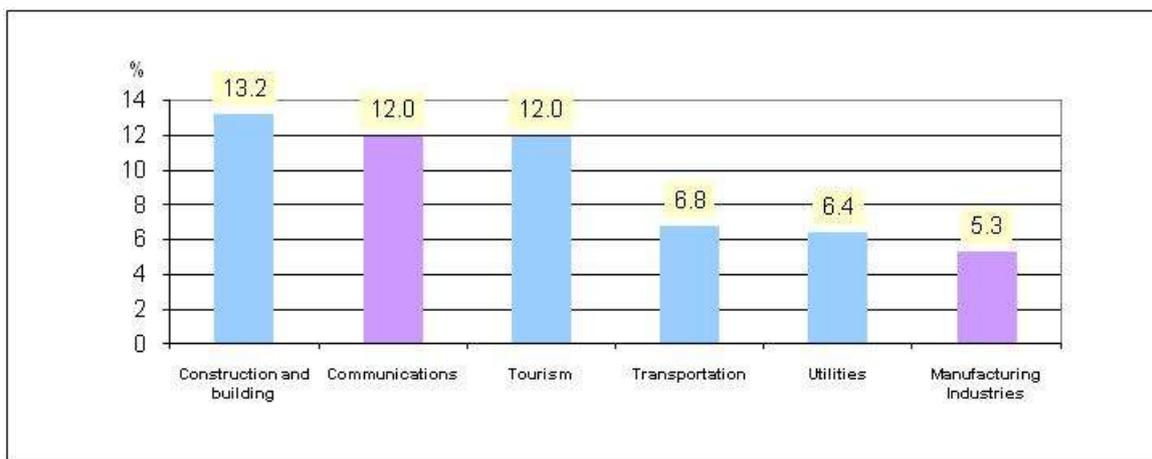
Egypt's latest ICT sector strategy (2011-2014) focuses on innovation and entrepreneurship as its main pillars, because of their potential role in enabling long-term and sustainable ICT sector growth. Innovation and entrepreneurship in ICT will be the lynchpin of a national effort to increase competitiveness, create jobs and opportunities, and to enhance Egypt's overall standard of living and quality of life.

The Technology Innovation and Entrepreneurship Strategy (2011-2014) will focus on enabling ICT companies to become established, to operate and to innovate in Egypt, enticing foreign and local ICT

²¹ Preliminary figure

companies to generate, enrich and expand on innovative ideas. The strategy also aims at building Egypt's brand as a regional hub for innovation, in addition to engaging diverse stakeholders in generating, financing, supporting and deploying ICT-related innovation.

Figure 8: Selected Economic Sectors value added (2009/2010)



Source: MoED, 2010

As a result of the continuous liberalization and deregulation processes, The ICT sector attracted in average US\$ 1 Billion foreign direct investment annually. Moreover, the sector was transformed from one competing for resources to a net contributor to the treasury. The Egypt's ICT sector added over EGP 62.92billion to the treasury during the period (2005-2009)²²; enabling the government to improve different social services.

D. R&D and Investments in the ICT sector

MCIT recognizes that advanced scientific research and development are key elements to success in realizing an information society. Therefore, MCIT is taking strides to promote and modernize innovative scientific research and implement partnership between the public and private sectors and multinationals on both the industrial and academic levels. The purpose of these Centres is to provide a platform for performing Research and Development that is conducted by Egyptian experts in their respective fields of specialization. The R&D Centers of Excellence are created in the form of consortiums consisting of leading local and multinational industrial organizations operating in Egypt from both the private and public sectors, as well as Egyptian universities and research institutions. Creating mechanisms for collaboration between academic and industrial institutions on the local and international levels is a key feature and goal of MCIT's R&D centers.

Innovation nurtured by R&D is becoming MCIT's focal point in the coming period as suggested by the new strategy for 2011-2014. The strategy will build up on accomplishments already achieved in setting an encouraging environment for R&D and innovation. Early in year 2010 the establishment of an innovation center in the Smart Village took place to enable Egypt to become a world-class hub for ICT-based innovation and entrepreneurship. Later in the same year the launch of the (TIEC) was announced to act as the main vehicle enabling Egypt to become the leading regional player in ICT-based innovation and entrepreneurship.

Technology Innovation and Entrepreneurship Center (TIEC)

²⁵ 2008: 9 Billion EGP (Preliminary figure)_while 2009 :10.Billion EGP (Estimated figure)

In September 2010, MCIT launched the Technology Innovation and Entrepreneurship Center (TIEC) at Smart Village. The mission of TIEC is to stimulate an innovation-based economy through strategizing, facilitating and promoting innovation and entrepreneurship, and by supporting the creation of intellectual property in ICT and its applications. TIEC is at the forefront of efforts to develop and implement the ICT Innovation and Entrepreneurship Strategy, which seeks to position Egypt as the leading regional hub and a world-class destination for ICT-based innovation and entrepreneurship. To achieve this, the center focuses on six strategic pillars: innovation culture; innovation brand; intellectual property exchange; clusters and optimization; business environment; and resources. The center operates as a public-private partnership, coordinating the efforts of government agencies, multinational companies, universities, research centers and other entities to provide a range of activities that include programs covering innovation assessment and certification, capacity building and incubation. Negotiations are currently under way between TIEC and agencies from the Middle East, Europe and the United

States to establish collaborative partnerships to enhance strengthen and support the center's role and ability to achieve its mission.

In October 2010, a cooperation protocol was signed between the TIEC; TechWadi, an NGO working to build bridges between the United States and the MENA region to promote entrepreneurship, support innovation and foster economic development; and PlugandPlay TechCenter (PnP), a US technology incubation management firm. The resulting incubation center, located in Smart Village, is expected to host 80 Egyptian start-ups during the next three years. PnP will provide funding, management, experience, technology transfer and necessary knowledge to speed up the growth of these start-ups. Promising company owners may also receive training at PnP facilities in California. This protocol empowers TIEC in its mission to develop the base of technological creativity, instill a culture of business leadership among young people and create job opportunities for qualified graduates by means of attracting international investment to Egyptian ICT ventures.

TIEC Mobile Computing Entrepreneurial Center

The TIEC's Mobile Computing Entrepreneurial Center aims to assist startups in developing mobile applications with a view to enlarging Egypt's developer base in this field, and to train young people in the production of such technology so that Egypt can take a prominent position in the global mobile applications market. Partnership with platform owners such as Microsoft, Nokia and Research In Motion and cooperation with mobile operators such as Vodafone and Etisalat in the training of 200-300 university graduates will help build capacity in the market. These graduates will receive training in mobile application development and business innovation, with those judged to have devised the most creative mobile applications to be rewarded with grants. It is planned that these applications will be adopted, promoted and distributed in Egypt and internationally.

V. Appendix: Core ICT Indicators

Appendix 1: ICT Infrastructure and access

	<u>Indicators</u>	<u>2009</u>	<u>2010</u>
A1	Fixed telephone lines per 100 inhabitants	13.42	12.24
A2	Mobile cellular Telephone subscribers per 100 inhabitants	72.13	90.44
A3	Fixed Internet subscribers per 100 inhabitants	3.0	3.5
A4	Fixed Broadband Internet subscribers per 100 inhabitants	1.34	1.83
A5	Mobile Broadband subscribers per 100 inhabitants	7	12
A6	International Internet bandwidth per inhabitant (bits/second/in habitant)	1267	1563
A7	Percentage of Population covered by mobile cellular telephony	99.6	NA
A8	Broadband Internet access tariffs (per month), in US\$	8.29	8.11
A9	Percentage of localities with public Internet access centers (PIACs) by number of inhabitants	43	47

Appendix 2: Access to and use of ICT by households and individuals

	<u>Indicators</u>	<u>2009</u>	<u>2010</u>	
HH1	Proportion of households with a radio	77.27	68.5	
HH2	Proportion of households with a TV	96.49	94.1	
HH3	Proportion of households with a fixed line telephone	54.76	43.8	
HH4	Proportion of households with a mobile cellular telephone	58.71	79.1	
HH5	Proportion of households with a computer	27.8	31.0	
HH6	Proportion of individuals who used a computer in the last 12 months (from any location)	23.7	26	
HH7	Proportion of households with Internet access at home ²³	25	32.19	
HH8	Proportion of individuals who used the Internet in the last 12 ¹	21	29	
HH9	Location of	Home	59.4	80.5

²³Calculated based on hard indicators.

	individual use of the Internet in the last 12 months (% total individuals in Households using internet)	Work	15.6	4.2
		Place of education	25.9	42.3
		Mobile access via a mobile cellular telephone	....	40.4
HH10	Internet activities undertaken by individuals in the last 12 months (% total individuals in Households using internet)	Getting Information about goods or services	8.8	2.8
		Getting Information related to health or health services	7.3	25.8
		Getting information from general government organizations via websites or email	7.4	9.1
		Communicating	43.3	27.2
		Purchasing or ordering goods or services	1.2	0.10
		Internet banking	1.30	0.02
		Education or learning activities	42.8	39.1
		Playing or Downloading video games or computer games	32.4	24.4
		Downloading software ²⁴	21.57	49.72
		HH11	Proportion of individuals with use of a mobile cellular telephone (from any location) as a percentage of households individuals	--	68.3
HH12	Proportion of households with access to the Internet by type of access (% total individuals in Households using internet)	Narrowband	.....	4.37
		Broadband	....	98.3
HH13	Frequency of	At least once a day	32.05	59.7

²⁴ Downloading songs and software

	individual of the Internet in the last 12 months (from any location) (% total individuals in Households using internet)	At least once a week	40.34	14.1
		At least once a month	3.6	24.2

Appendix 3: Use of ICT by businesses

	<u>Indicator</u>	2008	2009	
B1	Proportion of Businesses using computers	40.1	64	
B2	Proportion of Businesses using the Internet	34.6	35	
B3	Proportion of businesses with a web site (%businesses of using internet)	57.7	62	
B4	Proportion of businesses with an intranet	....	11	
B5	Proportion of Businesses receiving orders over the Internet	....	10	
B6	Proportion of Businesses placing order over the Internet	....	7	
B7	Proportion of businesses using the Internet by type of access	narrowband	16.6	13
		Fixed broadband	86.5	93
B8	Proportion of businesses with a local area network (LAN)	88.8	93.3	
B9	Proportion of businesses with an extranet	6.6	2.5	
B10	Proportion of Businesses using the Internet by type of activity	Sending and receiving mails	74.7	83
		Getting Information about goods or services	65.08	69
		Getting information from general government organizations	40.6	39
		Internet banking or accessing other financial services	24	24
		Interacting with General government organizations	11.6	16
		Providing Customer services	37	47
		Delivering products on line	24.8	19

Appendix 4: ICT sector

	<u>Indicator</u>	<u>2010</u>
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ICT1	Proportion of total business sector workforce involved in the ICT sector	3.5
ICT2	Contribution of ICT Sector in Real GDP	4

Appendix 5: ICT in Education

	<u>Indicator</u>	<u>2010</u>
ED1	Proportion of schools with computer	97
ED2	Proportion of schools with internet	66
ED3	Proportion of faculties and institutes equipped with PCs	99
ED4	Proportion of faculties and institutes equipped with electronic educational labs	98
ED5	Proportion of faculties and institutes connected to the internet	92
ED6	Proportion of students who use computer in pre university education and got degrees exceed 90% in their final exams	53
ED7	Proportion of students who use internet in pre university education and got degrees exceed 90% in their final exams	66
ED8	Proportion of students who use computer in university education and got degrees exceed 80% in their final exams	32
ED9	Proportion of students who use internet in university education and got degrees exceed 80% in their final exams	33
ED10	Proportion of academic staff benefited significantly from using ICT in education process in pre university education (% of teachers using ICT in education) (%).	52
ED11	Proportion of academic staff using internet in e-learning and exchanging information in university education (% of academic staff use internet in faculties / institutes) (%).	93

Appendix 6: ICT Economic Indicators

Item	Value in 2010
ICT GDP at fixed prices (billion EGP)	34.3
ICT GDP at fixed prices annual growth rate (%)	13
ICT expenditure (as a percentage of GDP)	5.7

ICT total issued capital (billion EGP)	44.82
Average annual FDI in ICT sector (billion US\$)	1
ICT exports (million US\$)	1100
No. of ICT companies	3934
No. of ICT employees (thousands)	205
ICT contribution to the treasury (million EGP) [°]	10
Fixed line monthly price basket (US\$)	4.23 (in 2 nd quarter of 2010)
Mobile monthly price basket (US\$)	3.43 (in 2 nd quarter of 2010)
Internet monthly price basket (US\$)	4.46 (in 2 nd quarter of 2010)

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[°] Estimated figure

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