AFRICA ICT POLICY MONITOR PROJECT:
Egypt ICT Country Report

Submitted to the Association of Progressive Communications (APC)

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April 2003

Egypt ICT Country Report

Content

Executive Summary

With more than 14,000 official civil society organizations (CSOs) working in diverse aspects of social life[1], Egypt's CSO sector is active and far reaching. Despite this proliferation of CSOs Egypt does not have an active grass roots presence in the Information and Communication Technology (ICT) field. The absence of a strong CSO presence in ICT is mainly due to the early availability of Internet connection through Egyptian academia, semi-governmental bodies, the private sector and the government with little or no involvement of CSO.

Furthermore, the Egyptian government has made big strides in the last decade towards establishing the country as a potential ICT hub in the region. Major infrastructure developments have updated the ICT capacities in Egypt. In addition to laying a modern communication infrastructure, the government is promoting the use of computers and the Internet for economic growth – the goal is to become another India or Ireland.

With the increase in the number of users issues like regulation and policy formulation of the Internet are becoming an issue, though they are still the arena of a tiny minority of activists. In the coming years it will become evident how Egypt will juggle the liberties that the computer, and especially the Internet, offer to individuals and the security needs posed by the state. The recent lobbying done by a civil society organization regarding the newest communication bill is an encouraging sign that representatives of the society are demanding a stake in the ICT policy formulation process. At the same time Egypt's National ICT Strategy does not address CSOs as a partner for the spread of ICT in the country.

The fact is that notwithstanding the heavy investments and relatively easy availability of the Internet, it is not yet an established communication channel in Egypt. ICT is until now used by the few and privileged, though its user base is increasing at a daily rate. Yet it is still to be seen how the change in user demographics will affect the utilization of this communication tool in the near future.

BACKGROUND

Country Overview

With an estimated population of over 70 million and a growth rate of 1.66% in 2002, the Arab Republic of Egypt is the most populated country in the Arab region. The government of Egypt (GOE) has been following a structural economic reform program with the IMF and the World Bank since early 1990s. GOE has invested heavily in upgrading its telecom infrastructure to attract domestic and foreign investments. Part of the reform was an increased

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[1] Sectors include health, education, environment, income generation, gender, habitat, to mention a few.

liberalization of the economy that began with the privatization of the dominant public sector accompanied with legislative adjustments. One of Egypt's difficulties is its heavy reliance on tourism, Suez Canal duties and gas exports for foreign revenue income. The GOE is aware that it needs to diversify its foreign income potential – its human resources being an asset.

According to a mid-1990s estimate, 23% of Egypt's population is below the poverty line. In 2001 unemployment was estimated at 12%, with over 500,000 new entrants into the labour market per year. In 1999, GOE has identified ICT as a national development priority. The government perceives that it has adequate labour power, which if trained, can make Egypt into a formidable ICT industry. The GOE has aspiration to become a regional and international ICT provider competing with India and Ireland.

Telecom and Internet: History and Stakeholders

Egypt introduced its first Internet use in 1993 through a link by the Egyptian University Network and France. In 1993, Egypt had 2,000 Internet users - mainly from the academic community – today we have more than 400,000 users. The Cabinet Information and Decision Support Center (IDSC) of the Egyptian Cabinet and the Regional Information Technology and Software Engineering Center (RITSEC) collaborated to enlarge the Internet user base in the country. From one local Internet Service Provider (ISP) in 1993 to 12 in 1996, Egypt now has 106 ISPs, most of which are from the private sector. This exponential growth in Internet users and ISPs show the tremendous demand and need for Internet use in Egypt. This growth in ISPs was also the outcome of creating points of Internet presence (POPs) outside of Cairo. This permitted users in secondary cities to connect to the Internet at local call rates. As for the future, USAID estimated the potential Internet users in Egypt by the year 2003 as 1 million users.

ICT POLICY

Telecom Policy and Regulation

The Main Stakeholders:

The country's operator – **Telecom Egypt**[2] – is still the sector's dominant player despite the liberalization measures that have been introduced in 1998. Telecom Egypt is exclusively operating Egypt's fixed telephone lines, its international connection and a big share of its Internet access. In 2000, Telecom Egypt has been incorporated as a joint stock company under the Egyptian companies law 159.[3]

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[2] Formerly the Arab Republic of Egypt Telecommunication Organization (ARENTO).
[3] Approximately 20% of stocks sold to date, 33% would be directed towards the local market, while the remaining 67% towards international investors.

Telecom Egypt manages licensing and tariffs of telecom services. The board of directors of Telecom Egypt through MCIT recommends telecommunications tariffs to the Council of Ministers (Cabinet). Once approved, the Council puts them in effect by a ministerial decree.

The exception is for mobile (cell) telephony. Under the new regulations set by the **Telecommunications Regulatory Authority (TRA)**, mobile telecommunications service providers maintain their own tariffs under the regulations set by the TRA.

One of the main steps in deregulating the sector was the creation of the Telecommunications Regulatory Authority (TRA) in 1998. TRA replaced the Telecommunications Regulatory Board (TRB), which had proven ineffective. Law 19/1998, by which TRA was established, is the first law that separates the regulatory authority from the telecom operational agency. Since the stipulation of law 19/1998 Telecom Egypt is solely responsible for the operational aspects of the telecoms and TRA manages all regulatory issues. To further institutionalize TRA's role the Presidential Decree 101/1998 established the framework for the organisation's regulatory authority; accordingly TRA's main responsibilities are:

- To increase private investment in the sector.[4]
- To oversee various technical aspects of the telecommunications market such as monitoring frequencies and their spectrums.
- To issue service licenses and to approve all sector related tariffs.

The **Ministry of Telecommunications and Information (MCIT)**, was launched in October 1999, to replace the Ministry of Transport and Telecommunications as the policy-making authority of the telecom sector. MCIT's mandate is to further develop and improve the telecommunication infrastructure and to promote the development of an information society in Egypt.[5]

The first two sectors that have been privatized are the mobile communication market and the Internet service provision (ISP).

A concern in the telecom privatization process is the maintenance of balance between commercial service and the provision of universal services. Over 20% of Egypt's citizens are under the poverty line. Therefore the government has to secure that universality of services will be respected when the private sector takes over time-honored government supplied services. To counteract the wholly profit driven approach of the private sector,

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[4] Indeed, TRA made a landmark decision when it ordered Telecom Egypt to pay the same license fees as the private sector mobile communication providers MobiNil and Vodafone Egypt when the state-owned company successfully bid to acquire the third GSM license.

[5] ENCIP http://meda.encip.org/country/egypt_1.html

the new telecom law included conditions assuring that telecom services will be provided to all citizens regardless of varied income levels.

The law established the Universal Services Fund to which all operators, those who will provide service for the isolated areas as well as those who will not, must contribute. The money from this fund will be paid to cover the difference between actual cost and service subsidies to any operator that has to carry the cost burden of setting up services in an isolated area, that is not going to be profitable and may not generate enough revenue to cover costs. Further changes will be added to the law by 2005, when Telecom Egypt will begin introducing competition in fixed-line services.[6]

The framework for the new Telecom Act focuses on liberalization and privatization its main goals are:

- Encouragement of transparent competition
- Licensing of national companies for the management and operation of network services
- Opening international markets to Egyptian communications services
- Protection of consumer rights and provision of quality services at affordable prices
- Maximizing profits on the use of frequency spectrum
- Organizing the licensing of wired and wireless communications services.[7]

National ICT Strategy

In December 1999, shortly after the creation of the MCIT, the Ministry announced the Egyptian National Communications and Information Technology Plan (NCITP). The NCITP Plan's main objectives are:

- To create a strong, exportable IT industry in Egypt

- To support the development of a state-of-the-art national telecommunications network that provides an enabling environment for business and electronically links Egypt with the rest of the world

- To increase employment opportunities in the communications and information technology sectors

- To build an information society capable of absorbing and benefiting from expanding sources of information

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[6] www.businesstoday-eg.com/main/faceofbus.htm

[7] MCIT

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- To develop and upgrade ICT systems to improve standards of living and support competitiveness in international ICT market.[8]

To achieve these objectives the MCIT is initiating important legal, financial and policy changes. Some of the most important of which are:

- To legislate relevant e-commerce laws.

- To enable secure on-line payment systems

- To develop on-line financial services

- To coordinate with existing government bodies such as the customs authority to facilitate ease of trade.

- To educate citizens and business owners as to the potential of web commerce

- To upgrade existing telecommunications infrastructure to provide quality service for e-commerce applications

The Ministry's NCITP main goal is to create a national environment conducive to e-investment and e-business. The MCIT is building "Smart Villages" as mini Silicon Valley enclaves for Egypt as an incentive for the domestic and international private sector to establish a ICT industries. On the universal accessibility side, the NCITP aims to establish 50 Technology Access Centers annually that will provide communication and information services, directly benefiting all citizens of Egypt.[9]

ICT AND SOCIETY

Computer and Internet Use

By late 2001, the Economist Intelligence Unit estimated that there were only one million computers in Egypt, 62 Internet service providers and 400,000 Internet users, representing 0.6 – 0.7 percent of the population. The present economic slowdown is not helping to increase the computer to citizen ration in Egypt.

MCIT is working to counter the slowing of computer penetration in Egypt. In co-ordination with universities, schools, public libraries and NGOs, the ministry is setting up 300 technology clubs around the country; providing citizens with Internet access and computer training.

Furthermore, the Government of Egypt, as part of its development plan, is promoting the creation of an ICT hub in the country. Despite that, Egypt's computer and Internet

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[8] MCIT
[9] MCIT

penetration is still relatively low at around 0.7 percent[10]; with an aggregate total number of Internet users between 500,000 and one million[11]. The government is implementing a national project to facilitate the spread of computers in the country by its "A computer for every House" programme. Telephone owning households are encouraged to buy a computer by repaying it at a low monthly installment that is added to their telephone bill.

There are different views regarding the cause of the relatively low Internet use in Egypt. A proponent argues that the low Internet use is caused by low awareness of the Egyptian public regarding the Internet's capabilities and potential and not due to the manly stated cost reason.[12] This argument is based on the widespread use of mobile phones in Egypt; the cost of having and operating a cell phone is comparable to having a computer and Internet connection.

To alleviate the monthly Internet Service Provider (ISP) subscription fees, the government has made connectivity easier through universal numbers that allow users to go online without having a monthly subscription with a particular ISP. This is one of the governments' initiatives to encourage the average Egyptian to use the Internet. The government is in general very supportive to the increase of computer and Internet use. Despite these universal access numbers, the connection still costs considerably as telephone calls costs are cumulative. The per hour connectivity rate[13] is approximately $0.25/hour, making long Internet connections quite expensive for the average Egyptian.[14]

We believe that, despite the convincing argument above, there are more structural reasons behind the lower use of the Internet in Egypt in contrast to the widespread use of cell phones. Some additional deterrence, beside costs, for a higher Internet penetration are:

a) Literacy levels, (65% of the population is literate) and in general a higher tendency towards the spoken word in the Egyptian popular culture promotes the use of the cell phone more than the use of the computer-Internet. To name the most important reasons for the low use of the Internet we can cite: low computer penetration, low per capita income, language barrier, literacy barrier, and a low awareness of what the computer-Internet can offer for individual and collective use or satisfaction of needs and necessities.

b) Language – English being the main language of the Internet – is a partial deterrent for wide use of the medium. Though in recent years several popular Egyptian and Arab websites appeared that are widely used, especially their chat services.

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[10] Though it ranks among the highest connected countries in the Arab region, preceded only by Lebanon, Saudi Arabia and the United Arab Emirates.

[11] The number of users is hard to determine as the number of people accessing the different Internet points can only be estimated.

[12] El Nawawy, Mohamed, "Profiling Internet Users in Egypt: Understanding the Primary Deterrent Against their Growth in Number" http://www.isoc.org/inet2000/cdproceedings/8d/8d_3.htm

[13] Instead of a flat connection rate as in the US, the Egyptian user is paying higher connectivity rates the longer she/he online.

[14] Some people of middle-level incomes have told me that they discourage their children as much as they can from using the Internet after they were confronted with phone bills they were not able to sustain.

c) "Ease of handling" - mobile phones are an extension of a long-standing, traditional mode of communication: the telephone. Mobile (cell) phones are a way for many people to circumvent the long waiting period that is requested to install a land-based phone.

d) Socially driven "needs" - cell phones are part of a societal prestige – if your friend, acquaintance or relative has one after a while one felt the pressure to have one too – the imitation-prestige factor is a strong one.[15] Then with time came the ease of being able to contact people without waiting for them to be at the office or at home.

e) Limited business and financial uses for the Internet. Credit cards are not owned or used by the majority of Egyptians nor is there a legal way to buy goods and/or services through an electronic means in Egypt.

f) Mobile phones are often used in paging text messages, it is a cheap way for people to communicate.

Despite the above the private sector and NGOs are adopting emailing as a convenient way to do business. Though this trend is more evident in Cairo and Alexandria, it seems it is spreading to other regions in the country.

Civil Society Organisations (CSOs): ICT Use and Policy Formulation

CSOs working for the dissemination of ICT in Egypt are mostly active in community development, e.g. computer and Internet training, establishing and running community telecenters, establishing computer labs and training at schools, libraries, youth clubs etc. ICT in this case becomes a developmental tool. Actual participation in ICT policy is very limited.

The formulation process of the new Communication bill is a good measure for the involvement of the Egyptian civil society in ICT policy. It is telling that the General Syndicate of Communications Workers (GSCW) was not involved in the bill's formulation process. GSCW's board objected that the communication bill was not presented to the Syndicate to comment upon before it was sent to Parliament.[16] The Egyptian Initiative for Personal Rights (EIPR) was an active force in the parliament's debate over Article 65 of the Communications Bill. Though EIPR's objectives go beyond ICT issues in Egypt to all types of human right issues.[17] Aside from EIPR there were only

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[15] This is evident in the continuous quest of many people to update their phones to the newer models. In private conversation with people from all walks of life the social-prestige significance of the cell phone model was always underlined.

[16] El Wafd Newspaper, 21 December 2002 and interview with Mr. Hossam Bahgat, 22 December 2002.

[17] The Egyptian Initiative for Personal Rights (EIPR) started its activities in May 2002. EIPR's work on privacy included, in addition to their campaign on the new Communication Bill, the right to privacy and the right to adequate housing, they have published a book in September 2002 on this issue. Further their work included a report on the right to privacy as guaranteed by the International Covenant on Civil and Political

the Scientific Association for Communications Engineers (SACE) who participated in the EIPR organized expert group meeting on the communications bill.[18]

Article 65 as presented first would have expanded the government's power to engage in surveillance of private conversations and communications. The proposed text of the article allowed the Military Forces, Ministry of the Interior and the National Security Authority to access any communications network "in fulfillment of national security needs." The ambiguous wording of that phrase could have opened the door for security agencies to use national security concerns as an excuse to engage in preemptive surveillance of individuals' communications.

According to the amendment, which was approved by the People's Assembly on 30 December 2002 and for which EIPR had been campaigning, the article now starts by referring to citizens' legal right to protection of private life; the only reference to privacy in the entire law. It also restricts the right of security agencies to interfere with private communications except "within the limits specified by law". Parliament's Speaker Fathi Sorour also demanded that a paragraph be added to the sessions' records specifying the legal guarantees for secrecy of communications in the Code of Criminal Procedures. Under those guarantees security agencies can only interfere with private communications after obtaining a causal judicial authorization for no longer than 30 days and only in the course of investigating a felony or a misdemeanor punishable by more than three months of imprisonment.[19]

ICT INFRASTRUCTURE

Telecommunications and Internet Infrastructure

Egypt has a modern, 90% digital, telephone network due to an extensive enhancement of its infrastructure throughout the 1990s. Egypt Telecom has installed nearly 5 million fixed lines resulting in a telephone density of 16 percent in Cairo and Alexandria and an overall approximate 10 percent density in the rest of the country, an over 10 times increase from 1980 levels. With Internet and mobile services available in most of Egypt.[20]

> ***Domestic communications*** are based on a coaxial cable and a microwave radio relay that has key hubs in the capital, Cairo and major provincial cities, i.e. Alexandria, Tanta, Mansura, Suez and Ismailia. The country has a X.25 network, Egypt Net, with the capacity of 3,500 ports. Cairo has ISDN services since 1998.

Rights (ICCPR). In December 2002, EIPR marked the World AIDS Day by issuing a press release and publishing a manual for NGOs on HIV/AIDS and human rights.

[18] SACE's secretary general Mr. Mohamed Abukrish holds an official position at Telecom Egypt

[19] EIPR

[20] USAID

Regional communications tie Egypt, Syria, and Lebanon laid a fiber-optic cable, called ALETAR-BRYTAR in 1997. A regional microwave system links Egypt to Libya and Jordan. Egypt is a member of ARABSAT.

International communications are conducted through satellite earth stations, five submarine fiber optic links and microwave radio relay. Egypt is connected to the SEA-ME-WE3[21] submarine fiber optic system and is a member of INTELSAT (Atlantic Ocean and Indian Ocean), INMARSAT and the Fiber Optic Link around the globe (FLAG) project.

ICT Infrastructure State Monopoly and Privatization

There are nine telecommunications service providers licensed to do business in Egypt: Telecom Egypt, the government entity that operates the traditional fixed landline network; two GSM (mobile telephone) companies; two providers of pay phone services; and four low earth orbital systems operators (VSAT Service, Anmar-Sat, Al-Soraya, and Global-Sat).

Egyptian fixed-line telecommunications services are among the fastest growing in the Middle East and North Africa. By the end of 2000, Egypt's telecommunications revenue from the fixed line network alone amounted to more than $2.5 billion, representing 2 percent of Egypt's total GDP (this ranked Egypt second after Saudi Arabia in the Arab region). In 2001, Egypt's revenue from all telecommunications services exceeded $3.3 billion. The rapid growth of the GSM market in Egypt is largely responsible for the high overall growth in revenues, accounting today for an estimated 40 percent of total telecommunications revenue.

In December 2002, Telecom Egypt was scheduled to launch a third 1800 GSM license. Nevertheless, Commercial Service sources report that this launch will likely be delayed until the second half of 2003, at the earliest. The latest information indicates that Telecom Egypt is still in the process of evaluating offers from three international operating companies (two of them reportedly American) to provide this service.

Egypt's telecommunications master plan consists of the modernization of the backbone of the sector by both expanding the capacity of the network and upgrading the current circuit switching technology to the more efficient packet switching technology.

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21 Telecom Egypt participated in the SEA-ME-WE 1 Project, the first underwater cable between Southeast Asia, the Middle East, and Western Europe. Egypt's participation in this project led to the expansion of telecommunications routes to foreign countries and increased the volume of international traffic in Egypt. This led Telecom Egypt to participate in a second project, SEA-ME-WE 2, which was implemented along the same route but served more countries and used digital fiber-optic technology. Egypt is presently involved in the SEA-ME-WE 3 project, which will be completed by the end of 1999. This cable will allow coverage from Europe to Japan and many other countries in Eastern Asia, using the latest technology. This cable will have 40 landing points.

Although Telecom Egypt retains the monopoly on fixed-line voice and the provision of international connectivity, as of 1 April 2000, there were some 1'251'000 cellular subscribers shared between Vodafone and MobiNil. The Egyptian ISP market is fully liberalized and highly competitive, at least in Cairo and Alexandria, with over 60 ISPs offering a range of services, including dedicated, dial-up, pre-paid and premium services. There are approximately 55'000 paying Internet subscribers and an estimated 250'000 Internet users. The market is currently expanding rapidly, especially after the introduction of a new premium-rate dial-up service (a 900 number for accessing the Internet) for which Telecom Egypt shares revenues with ISPs. The market is also showing an increasing degree of consolidation. Orascom, one of the shareholders in the leading cellular operator MobiNil, is also the biggest player in the Internet service provision market and owns 75 per cent of Egypt's largest ISP, LINKdotNET. The tie-up with the mobile operator is significant in that WAP services were introduced in May for a trial period, making Egypt one of the first countries in Africa to have introduced WAP.

Status of Privatization:

	Status	Comments
Infrastructure		
Public telecommunications Network	Telecom Egypt	
Local networks for voice telephony	Telecom Egypt	pay phone network is privatized (Menatel & Nile Phone)
Leased Lines	Telecom Egypt	
Voice Telephony		
Local Communications	Telecom Egypt	
Domestic long distance	Telecom Egypt	
International communications	Telecom Egypt	
	Status	Comments
Provision of voice services to closed user groups	Telecom Egypt	
Mobile Communications		
GSM digital	privatized	Two private providers (MobiNil & Vodafone)
Paging	Telecom Egypt	Almost extinct (replaced by mobile phones)
Satellite communications	privatized	Offered by MobiNil
Data transmission	Privatized: Mobile service Telecom Egypt: Fixed line	Mobile data transmission is privately offered.

	service	
Internet services provision	privatized	106 registered companies, though they are Telecom Egypt franchisees.
VSAT	privatized	Local Alkan Trading Group & NEC
Equipment provision	privatized	

Internet Pricing

The GOE is actively promoting the spread of the Internet. It has reduced the cost of a leased 64K line to $1,000/month. The streets of Cairo are lined with ads of phone numbers that provide instant access, without having to be a member with an ISP, by dialing the number for anyone having a computer, modem and a dedicated phone line. This connection costs including the price of the telephone use approx. $1.5/hour and the connection is rarely congested. Sales taxes and custom tariffs have been reduced on computers and software. In January 2002, Telecom Egypt began offering free Internet access in several cities, targeting the whole country by September, so people can surf the World Wide Web for the cost of a local phone call, for about $0.25 an hour.[22]

Voice-over IP (VOIP)

Trans Global Communications, which is merging with eGlobe, has received approval to provide (VoIP) services in cooperation with Telecom Egypt in 2000. The Egyptian market currently generates $2.5 billion in international telephone revenues, and the new VoIP service will bring an additional pathway for calls in and out of Egypt. eGlobe and Trans Global will provide the service jointly even before completion of the merger.[23]

VOIP generated controversy in Egypt. Before 2000, Egyptian users had access to VOIP, but in January 2000, Telecom Egypt instructed ISP's to block access to Net-To-Phone for their users. The reason behind this order was to prevent the outflow of hard currency resulting from the use of VOIP. A second reason was the loss of revenue for Telecom Egypt that had the monopoly on international calls. For the same reasons callback services are considered piracy and remain illegal.

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[22] MCIT and personal experience.
[23] MCIT

The ban on VOIP was short lived; due to the pressures of demand and available ways to circumvent the ban by illegal providers Telecom Egypt re-adopting VOIP in 2000.[24]

ICT Sectoral Applications (Current Status, Policies, Legal Aspects)

E-Government

MCIT is supporting an Egyptian E-Government initiative to serve as a channel between the government, citizens, business entities, and other governments as well. The E-Government project is one of the major development projects being executed by the Ministry of communication and Information Technology in - cooperation with the Ministries of State for Administrative Development, Justice, Finance, and Electricity and Power. It will eventually involve all Egyptian ministries and government bodies.

The project seeks to enhance the enabling environment for private sector participation. Authorities will continue to stipulate reform of the legislative environment by issuing a new E-signature law and applying a PKI mechanism. A new way to operate paper bureaucracy will be needed to achieve this goal (e.g., automation of workflow, application of ERP systems, and implementation of electronic archiving systems). The result will be faster and cheaper public services; for example, to apply for a driving license, the applicant will be able do it online from the nearest post office, kiosk, IT club, or even from his or her home 7/24. E-Government also provides a means for decision makers to receive accurate updates and information about macro development and infrastructure projects around the country. It will also assist the GOE to foster local competitiveness in the era of globalization, and implement various international agreements successfully.[25]

To date all ministries and three hundred government forms and procedures (of which the digital national identification card form was the first document provided) are presented on the "Government-online" website.[26] Also each of the governorates have their demographic data represented on the GovernoratesNet website.[27]

Human Resource Development

IT Technical Education/Training

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[24] http://www.totaltele.com/ipnetworks/7_voip.html

[25] MCIT http://www.mcit.gov.eg/

[26] www.alhokoma.gov.eg
[27] www.ipgd.idsc.gov.eg

MCIT projects domestic and international markets' needs for professional IT skills until 2004, are as follows: 20,000 to 25,000 highly skilled IT professionals, and 3,000 to 3,500 communications and networking specialists. To meet these demands MCIT established the Professional Training Program through which each year 5,000 IT professionals and 700 in communications and networking technology specialists will be trained.

One of the most successful IT training centers is the Information Technology Institute (ITI) was established as part of the IDSC in 1993 to train IT specialists. The ITI offers a popular 9 months training program that caters to the needs of ministries and government agencies. The Prime Minister approved in 2001 the creation of the Egyptian Technology University (ETU) as a private university.

The MCIT has formalized several agreements with international and private sector companies such Microsoft, Oracle, IBM, Lucent, Motorola, Siemens, NEC, and Alcatel, to assist the ministry in the creation and delivery of quality training programmes to promote local technological development. IBM trained 15,000 university graduates in web development, database development and administration, e-commerce and Microsoft Certified Engineer Training.

The problem Egypt faces, like many other developing countries, is the brain drain that affects in particular its IT labour force. It will need to be seen if the dot com crash has diminished this risk.
RITSEC launched a distance-learning center that will enable it to participate in the IBRD's Global Distance Learning Network. Through this center RITSEC will offer graduate studies in IT and management through distance learning programmes.[28]

Formal Education

The Ministry of Education (MOE) has installed 27 technology development centers, approximately one for each governorate's educational directorate. Each center contains an advance science lab and a multimedia lab. IT training is offered to the public through the centers' videoconferencing network, e.g. literacy classes, distance education, and teacher training. The MOE is in the process to provide Internet access in every school in Egypt at the primary and secondary level – though there is a low computer to students ratio limiting the benefit of the service.

At the university level, the Egyptian Universities Network (EUN)[29] is connecting fourteen universities. As in the schools the student to computer ratio is low limiting the access to a good computer and Internet hands-on training.

E-Commerce and E-Business

There are several limitation facing Egypt towards establishing a sound e-commerce system:

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[28] MCIT
[29] sunsite.scu.eun.eg

1. Credit cards are not mainstream, only few people own credit cards, it is mainly a cash based economy and the acquisition of a credit card requires the maintenance of a relatively large bank account.
2. the relative low numbers of people using the Internet is not an incentive for an e-commerce institutionalization in Egypt – low local market absorption capacity.
3. Back end business infrastructure is not advanced; this is further hampered by a cumbersome postal system.
4. Lack of laws and/or regulations handling e-signature or e-contracts.

In this regard, the Minister of CIT issued Decree No. 209 on December 18, 2000, creating a committee to prepare a proposal for a draft e-signature law. This committee included representatives from the Ministries of Justice, Finance, Interior, Foreign Affairs, Economy and Foreign Trade, the Ministry of State for Administrative Development, the Egyptian Central Bank, and the Cabinet Information and Decision Support Center, in addition to legal and technical experts from academia and from the private sector.

In addition, MCIT and the Ministry of Economy established a jointed e-commerce task force to:
a) establish encryption and payment security on line;
b) create the procedures for companies to adapt e-commerce;
c) encourage small and medium enterprise (SME) through e-commerce; and
d) build public awareness.

To assist the e-commerce, a full modernization of the National Postal Authority (NPA) is a government priority. With the restructuring and updating of service tariffs, the NPA will be an effective distribution center for back-office procedures vital for e-commerce. Egypt has also started to build the first of a series of IT business parks, or "smart villages," aimed at IT firms in the outskirts of Cairo.[30]

New IT investment has grown consistently in the last three years, to 1.05 billion pounds ($230 million) in 2001, compared to 620 million in 2000 and 290 million in 1999. The IT sector has created some 10,000 new jobs in the last two years.[31]

Examples of Egyptian businesses on the Net:
Financial services: Cairo and Alexandria Stock Exchanges On the Net: www.egyptse.com
Food services: www.otlob.com
Recruitment: www.careermideast.com
Real Estate: www.e-dar.com
Automobile sales: www.caronnile.com

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[30] MCIT
[31] MCIT

Health

The health sector is fairly well connected, nearly one-third of all hospitals have on-line access. Though Internet use for medical exchange of information is not prevalent. In early 2000 the Ministry of Health (MOH) opened an Internet hub for its physicians; but the old way to work prevails, the main communication tools are still telephones and faxes instead of emails. This is mainly due to the unavailability of universal computer and Internet access to MOH's employees.

The MCIT national plan contains the development hospital information systems and a health information network for the public. The MCIT has an ambitious national ICT plan, but limited resources to implement it. Therefore the costs for these two health projects are to be paid by the MOH – this budgetary constraint and dependency on other Ministries reduces the enforcement and implementation ability of MCIT.

Sectoral Links

Internet use by categories:

- News and Media: Over 30 Internet Sites, including Cairo Press Review [**http://www.sis.gov.eg/pressrev/html**]
- Arts and Culture: Over 50 sites, including (but not limited to) 5 arts galleries, 3 architecture-related sites, 21 sites dedicated to Islamic faith, and 5 sites on traditional folklore.
- Business and Industry: Over 200 sites. Several Web directories for businesses are now available:

  a. Corporate Home Page in Egypt: **http://www.idsc.gov.eg/co-link.htm**
  b. Egypt Business Centre: **http://163.121.10.42/amman/main/**
  c. Egypt Technology Development & High-tech Directory: **http://its-idsc.gov.eg/tdp/**
  d. Egypt Yellow Pages: **http://www.egypt-yellowpages.com**
  e. Egypt.com Business Directories: **http://www.egypt.com**
  f. Egypt Trade Pages: **http://www.egypt-pages.com**

- Personal Web Sites: 56 Egyptian personal Web sites are found on *EgyptSearch.com* Web directory.
- Education: 24 Web sites (2 graduate schools, 4 institutes, 12 universities, 6 K-12 grade).
- Government: 25 Government Ministries have a Web page. The official government Web site is located at: **http://www.parliament.gov.eg**. The government also created the

SIS (State Information Service) department that effectively disseminates information about Egypt using the latest communication technologies. The Web site of SIS is: **http://www.sis.gov.eg** - US mirror site is also available at: **http://www.us.sis.gov.eg**).

- Other usage: Egyptian World Wide Web sites are flourishing, from restaurants to hotels to magazines. Many ISPs are offering personal Web pages in their service package, and many also offer training. However, most Web pages are written in English and it is rare to find contents written in Arabic. Availability of Arabic applications for Web development is still not widely prevalent. This limits the use of the Internet beyond the educated, English-literate population.

In order to mobilize and empower the development of the Egyptian information content on the Internet, IDSC and RITSEC have jointly launched Egypt's Information Highway Project, which is a pilot project that aims at supporting Egypt's socio-economic growth. The project is an umbrella project within which several sub-projects have been initiated to tackle different crucial sectors including culture, tourism, healthcare, environment, industry, trade, investment, local administrative divisions (governorates), and public services. Since the inception of the program four pilot networks have been launch. Namely, these are:

Egypt's TourismNet: provides basic information on Egyptian hotels, restaurants, cruise lines, travel agents, transportation companies, and tourist attractions. Egypt's TourismNet contains several search engines that facilitate searching through tourism databases.

Egypt's CultureNet: provides information of the Egyptian cultural heritage, arts, historical sites, and museums.

Egypt's HealthNet: contains information on the Egyptian medical centers, physicians, medical companies, and medical laboratories. A search engine is provided for searching the physicians' database.

Egypt's GovernoratesNet: provides basic statistical information on Egypt's administrative divisions (Governorates).

CONCLUSION

At present due to the relatively low Internet penetration rate it is not used as a major outreach and dissemination tool for the public. Consequently consciousness of its potential and attention to ICT related legislation is not in the public eye. Internet use by CSOs society organizations is limited because its scope is limited – though the government's initiatives to spread computer and Internet use is rapidly increasing users and is spreading the Internet throughout Egypt into provincial towns and villages. It is expected that the role of ICT in the form of computers and Internet will be more relevant in the coming years.

ANNEX A
Acronyms

ARENTO	Arab Republic of Egypt Telecommunication Organization
CDC	Cairo Demographic Centre
CSO	Civil Society Organisation
EIPR	Egyptian Initiative for Personal Rights
EOHR	Egyptian Organisation for Human Rights
EUN	Egyptian Universities Network
GOE	Government of Egypt
GSCW	General Syndicate of Communications Workers
GSM	Groupe Spécial Mobile
IBRD	International Bank for Reconstruction and Development (World Bank)
ICCPR	International Covenant on Civil and Political Rights
ICT	Information and Communication Technology
IDSC	Cabinet Information and Decision Support Center
ISP	Internet Service Provider
ITI	Information Technology Institute
MCIT	Ministry of Telecommunications and Information
MOE	Ministry of Education
MOH	Ministry of Health
NCITP	National Communication and Information Technology Plan
NGO	Non-governmental Organisation
NPA	National Postal Authority
POP	Point of Internet Presence
RITSEC	Regional Information Technology and Software Engineering
SME	Small and Medium Enterprise
SIS	State Information Services
TRA	Telecommunications Regulatory Authority
TRB	Telecommunications Regulatory Board
VOIP	Voice-over Internet Protocol
VSAT	Very Small Aperture Terminal
USAID	United States Agency for International Development

ANNEX B

Links to Internet Sites on Egypt:
Government:

- Egypt State Information Services (SIS): **http://www.sis.gov.eg**, US Mirror site: **http://www.us.sis.gov.eg/**
- Government of Egypt Online (MisrNet): **http://www.misrnet.idsc.gov.eg/english/**
- IDSC: **http://www.idsc.gov.eg**
- A list of links to other government ministries can be found through Egyptsearch.com: **http://www.egyptsearch.com**

Academic:

- City University of Egypt: **http://www.cityu.edu/sites/egypt/default.htm**
- American University in Cairo: **http://auc-inf.org**
- The Arab Academy for Science and Technology: **http://www.soficom.com.eg/homepages/aast**
- University of Senghor: **http://www.refer.org.eg/accueil.htm**
- Ain Shams University: **http://asunet.shams.eun.eg**
- International Language Institute in Cairo: **http://www.ili.com.eg**
- Egyptian Universities Network (EUN): **http://www.frcu.eun.eg**
- Cairo University: **http://www.cairo.eun.eg/**
- Information Technology Institute: **http://iti-idsc.gov.eg**

Research:

- Cairo Demographic Centre (CDC): **http://www.frcu.eun.eg/www/homepage/cdc/menuright.htm**
- Academy of Scientific Research and Technology: **http://www.sti.sci.eg**
- The National Research Centre: **http://www.cairo.eun.eg**
- Central Laboratory for Agricultural Expert Systems: **http://potato.claes.sci.eg**
- The Armana Research Foundation (Egyptian Historical Research): **http://www.museum-tours.com/amarna/**
- Egyptian Centre for Economic Studies: **http://eces.org.eg**

Commercial:

- A listing of private companies in Egypt is available at the following address: **http://www.egyptsearch.com/search/Business:Companies:.html**

Associations:

- Egyptian Businessmen's Association: **http://www.eba.org.eg**
- Muslim Women's League: **http://www.win.net/mwl**

NGOs/Development:

- Egyptian Organization for Human Rights: **http://www.eohr.org.eg**
- National Project for the Development of Sinai: **http://www.sis.gov.eg/public/sinai/html/chap00.htm**
- UNDP Egypt: **http://its-idsc.gov.eg/work/undp**
- IDRC Regional Office for Middle East and Northern Africa: **http://www.idrc.ca/cairo/index_e.html**
- United Nations International Conference and Population and Development: **http://www.iisd.ca/linkages/cairo.html**

ANNEX C

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