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PROFILE OF THE INFORMATION SOCIETY IN THE STATE OF QATAR

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INTRODUCTION

Ever since the advent of the Industrial Revolution, and the technological advance that ensued, mankind has bean consistently striving to put scientific knowledge in the service of humanity. The science of communication, in the broadest sense, has developed to an unprecedented degree.

Information and Communications Technology (ICT) is but one aspect of the technological revolution that has taken place. The enormous potential of Information Technology for economic development and for creating more democratic societies and leading to more transparency in citizen- government relations.

Awareness of the power of ICT is not always reflected in the policies and development programmes of the less developed countries. The United Nations is in a unique position to promote the diffusion of ICT services worldwide, so that poorer nations may have access to information, scientific and otherwise. The power of ICT can be harnessed to support international efforts in the fight against poverty and decease.

The challenge facing the international community is not limited to bridging the "digital gap", but in preventing this gap from getting wider. Otherwise, the developing countries will become more and more marginalized.

ICT is not, as yet, a major priority for many developing countries, notwithstanding the fact that a knowledge based economy will be the future motive force in production and competitiveness.

Speaking at the regional level, the Arab countries are looking into ways to implement a common strategy to harness the power of ICT in such areas as, the Economy, Health, Business, and Education.

During the last 25 years or so, the State of Qatar, underwent a notable growth in all fields, and more particularly in the industrial production sector (Petrochemicals and Gas), which enabled Qatar to achieve a high economic rate of growth and placed the economy on a firm footing.

This economic growth has been instrumental in developing ICT and building the infrastructure for an IT literate society and an IT based economy. The upshot has been the spread of information system utilities in the civil service, private sector, not to mention schools and universities where IT has been, or is being introduced. Government and Business employees are being trained in the use of Information Systems in their respective fields of work.

This report consists of six parts including the introduction, which represents an overview of the State of Qatar; Part I deals with policies & National Strategy; Part II deals with Legislation and regulations appropriate to the information society. Part III deals with ICT Infrastructure. Part IV deals with Human Resources Development and finally Part V which covers ICT Applications.

A. THE STATE OF QATAR, AN OVERVIEW

1. *Location*

Qatar is a country of Western Arabia on a peninsula in the southwest Persian Gulf. The land area is about 11427 Km^2, extending over a distance of 180 Km from north to south with a maximum width of 85 Km. It is bounded from the southwest, north and east by Saudi Arabia, Bahrain and the United Arab Emirates respectively.

2. *Population*

The 1997 census gives the number of population as 522 thousand. Statistical estimates for Y2002 give a figure close to 616 thousand inhabitants. The number of people of working age (15 year olds and above) is about 323 thousand (i.e. 54 % of the total number of inhabitants, of which 14% are Qatari nationals).

3. *The Economy*

Oil and Gas is the cornerstone of the economy. Although Qatar is an oil-producing country, its future is tied to its huge reserves of natural gas. Qatar ranks third in the world in terms of the volume of confirmed reserves of natural gas. Oil and gas constitute the main source of revenue for the country. Thanks to these revenues, Qatar has been able to achieve a large annual surplus. The country's oil wealth and its small population have led to a high per capita income estimated at USD 28,270 in Y2002.

I. THE ICT NATIONAL STRATEGY AND PROSPECTS

A. FUTURE PROSPECTS OF ICT IN THE STATE OF QATAR

One distinctive feature of the 21st century is going to be the penetration of Information and Communication Technology (ICT) into all walks of life, a process that has already begun. Nowadays, a country's technical and productive capacity is measured by the quality of its ICT infrastructure and the number of IT professionals at its disposal.

The government under the leadership of H.H the Emir is in the course of implementing an ICT strategy that should lead to the social and economic development before the end of the decade (Y2010). This strategy rests on two premises:

(a) That ICT will assist in the socio-economic development of the state of Qatar by stimulating the economy and encouraging competitiveness;

(b) The active participation of citizens and residents in building the Information Society;

(c) A plan consisting of six projects is currently underway, with each project targeting a specific area on which ICT has a bearing. These projects can be implemented in parallel, even though they are interdependent.

1. *Project A. (ICT infrastructure)*

(a) The construction of a national telecommunications network. The first stage to be completed during the last quarter of Y2003;

(b) Setting up the organizational structure of the network.

Execution period: 4 to 10 years.

2. *Project B. (ICT literacy)*

(a) Introduction of E- learning;
(b) Extending E-mail service to all citizens;
(c) Introduction of post-graduate programs in ICT;
(d) Finding alternative means for establishing internet connections.

Execution period: the first and second phases to be completed by the end of Y2004 and Y2007 respectively.

3. *Project C (Improving the quality of life)*

(a) Health;
(b) Education;

(c) Sports and Youth activities;
(d) Handling emergencies.

Execution period: the first and second stages to be completed by the end of Y 2004 and Y2010 respectively.

4. *Project D (Governmental Services)*

(a) Promoting and developing E-government;
(b) Developing the Internal Governmental Network;
(c) Providing support for the extension of government services.

Execution period: 4 to 10 years.

5. *Project E (Business Environment)*

(a) Promoting E- commerce;

(b) Constructing a portal where commercial laws and regulations can be referenced;

(c) Participating in international agreements governing intellectual property rights and Network security.

Execution period: from 2 to 4 years.

6. *Project F (Localization and Innovation)*

(a) Building up the ICT sector so that it can assist in future plans;
(b) Passing legislation to protect and regulate intellectual property rights;
(c) Setting up funds for supporting Research and Development (R&D).

Execution period: 4 years.

II. LEGAL AND REGULATORY FRAMEWORKS

Aware of the huge potential of ICT in socio-economic development, the government of the state of Qatar has promulgated a series of laws and regulations pertaining to ICT. Decree no 25(Y2002) called for the appointment of a steering committee for the efficient implementation of E-government. This was followed by a second decree (No.26), which called for setting up an ICT commission to work out a strategy for the implementation of a national project and for maintaining a degree of competitiveness. To this end, the government has constantly striven to upgrade the country's communications networks.

Legislation for the protection of copyrights and intellectual property rights was introduced into the legal code. In 2002, law no. 7 was passed for the protection of

trademarks, trade names and graphic designs. Chapter V of the newly drafted penal code deals with computer crime, while chapter 6 deals with intellectual property rights.

Moreover, Qatar is a member state of the World Trade Organization (WTO), and is pledged to abide by all the multilateral trade agreements arising there from.

III. ICT INFRASTRUCTURE

A. NETWORKS AND CONNECTIVITY

Qatar is currently connected to several international networks such as ShowTime, Inmarsat and Thuraya. Furthermore Qatar is participating in the 'Global Mobile Personal Communication by Satellite' project (GMPCS), which covers the Arab world, North Africa and Southern Europe.

The telecommunications sector is now totally privatized through the establishment of a joint-stock company (Qtel), with the government owning 65% of the share capital and the rest owned by the public. Guided by feedback from clients, stock holders, and company personnel, a second project named " Qturn" is underway to make the company's services more efficient, by bringing ICT to bear on the management of various sectors, there by leading to more efficient planning and organization.

Communications Technology is one of the most important vehicles for staying in constant touch with the outside world, the primary objectives of project "Qturn" are as follows:

(a) Creating a work environment consistent with modern management practices;

(b) Any initiative undertaken should be guided by the needs of clients;

(c) Exploiting every opportunity for growth;

(d) Reinforcing the financial structure;

(e) Striving to achieve a high level of operational efficiency;

(f) Playing an active part in the overall development of the country.

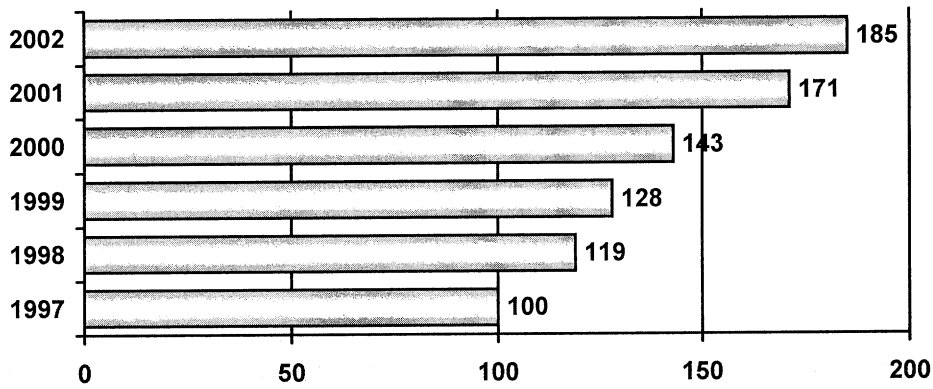
B. INFORMATION & COMMUNICATION SYSTEMS

The "Government Information System" net (GISnet), which has been in operation for some time, is a network interconnecting a number of ministries, government agencies and the university of Qatar. The network is a fiber-optic network based on FDDI and is operational 24 hours a day

1. *Telecommunication Services*

Qtel's drive to cut down call charges has led to a 20% increase in the volume of out-going calls. The figures for the years 2000 and 2001 are 143 million minutes and 171 million minutes respectively. Qtel's 25% reduction in international call's charges in Y2002 has led to a further increase in the number of international calls. In Y2002 it stood at about 185 million minutes. (see Figure 1).

Figure 1. Volume of outgoing calls in million of minutes

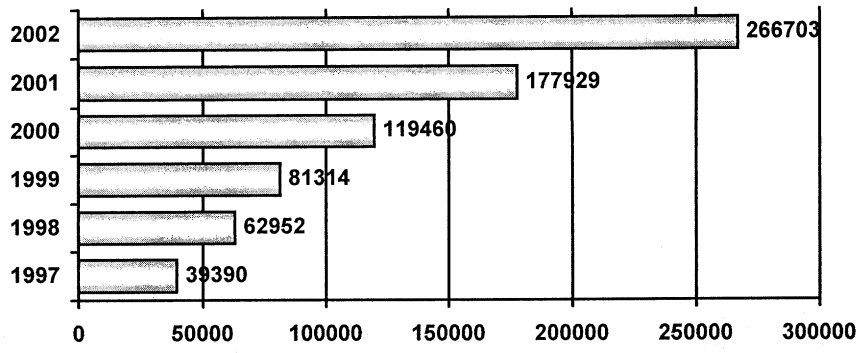


2. *Mobile Wireless Services*

Q-TEL offers a variety of wireless services, such as mobile telephone connections(GSM), Wireless Teleconferencing, Citizens Band (CB) and other Mobile personnel communication services via satellites (Inmarsat). A project to increase the Mobile Telecom Service capacity form 90000 to 203000 subscribers has already been completed.

In Y2002 the number of Mobile phones subscribers numbered 266703. Compared with the figure for Y2001, this represents an increase of 67%.

Figure 2. Number of Mobile phones (GSM) subscribers, 1997-2002

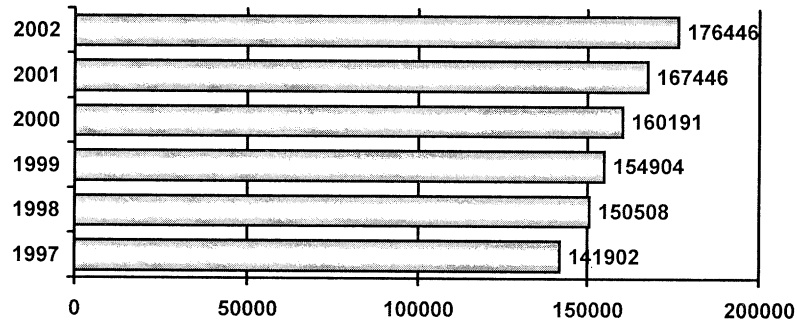


Q-TEL was quick to respond to the demand for Mobile telephone services. Many new products and services were launched, such as SMS, which provides instant news and information updates (Q Info.) in addition to providing fast access to the internet via ADSl broad bands.

3. *Local Telephone Network*

Figure3 shows an almost linear increase in the number of telephone subscribers (fixed lines) between 1997 and 2002, amounting to a 5.4% increase. In Y2002 there were about 29 telephone lines per 100 inhabitants.

Figure 3. Number of subscribers, 1997-2002



C. THE INFRASTRUCTURE

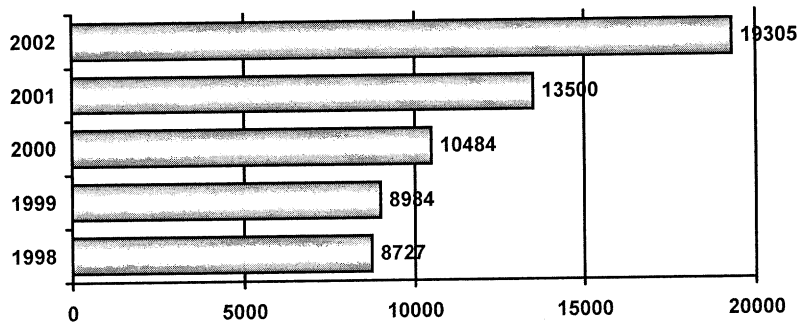
1. *Internet and Data Services*

(a) By December 2002, Q-TEL had successfully completed the first stage of the program to implement the next generation of internet protocols. This program is basically an integrated services system, which utilizes MPLS technology. The result is a network that offers Q-TEL clients a variety of services including voice, data and video services;

(b) Internet home users can now count on fast access to the Internet following the launching of broadband Internet (ADSL) service. In December 2002, ADSL shares the existing telephone lines but is 17 times faster than Internet dial-up connections, so that video films, music and games can be downloaded at a fast rate. More importantly ADSL connections will be the motive force for conducting electronic commerce (E-commerce).

ADSL service is currently available to at least 73% of internet users which is a significant proportion comparable with that in advanced countries. Moreover, Q-TEL is striving to improve the efficiency and speed of internet dial-up connections services, by constantly upgrading the internet services. One of Q-TEL's top priorities is to wider the circle of Internet users, especially residential users. Fig.4 shows the increase in the number of Internet subscribers over the years (1998-2002).

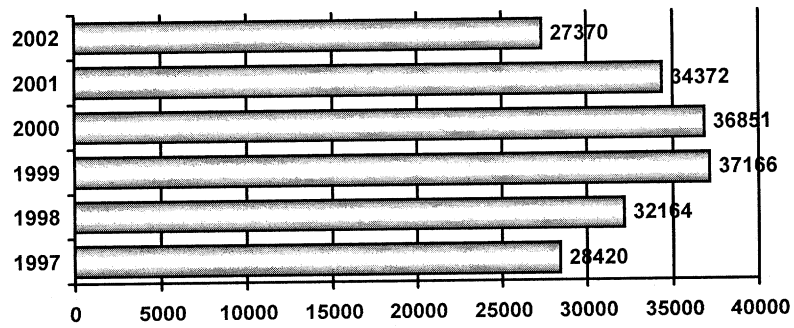
Figure 4. Number of Internet subscribers, 1998-2002



2. *Qatar Cable Vision (QCV)*

QCV employs two systems: the microwave Video Distribution System (MVDS) which casts about 60 TV channels and 20 video channels. The system was launched in Y2000. In Y2002, the number of QCV subscribers was 9539 compared with 5946 in Y2001. The second system (MMDS), launched in 1993, casts 32 TV channels. In 2002 the number of subscribers was 17831 compared with 28426 in Y2001. Figure 5 shows the number of QCV subscribers. The decrease in the number of subscribes between Y2001 and Y2002 is attributed to the rise in the number of people using Satellite dish reception, soon after the government had granted permission for the importation and sale of receivers.

Figure 5. Number of cablevision subscribers, 1997-2002



3. *Computer literacy and the Internet*

Statistics show that the average annual spending on telecommunication services amounts QR 2, 178,205 of which 3.4% is spent on the International. Figures 6 & 7 show the relative position of Qatar with respect to other Gulf States in terms of the numbers of Internet users and personal computers.

Figure 6. Number of Internet users in various Gulf States, 2002

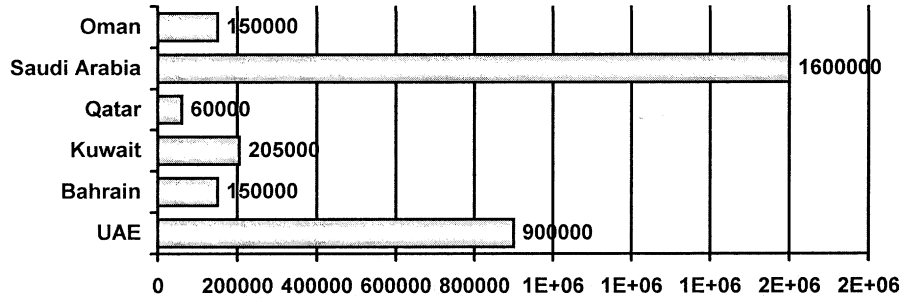
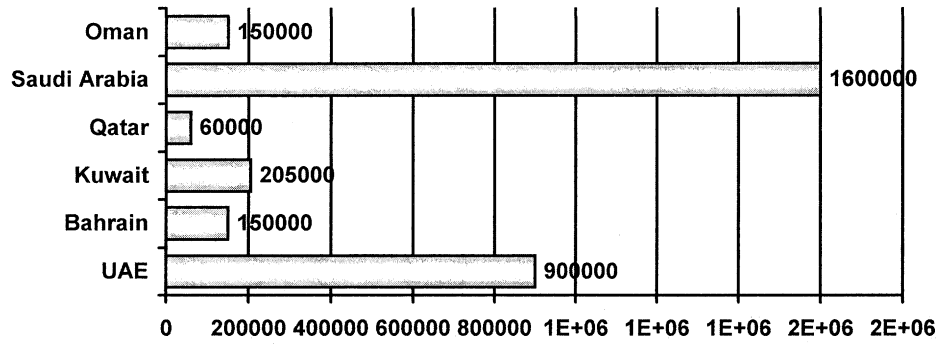


Figure 7. Number of personal computers in various Gulf States, 2002



IV. DEVELOPMENT OF HUMAN RESOURCES, EDUCATION AND TECHNICAL TRAINING

A. HIGHER EDUCATION

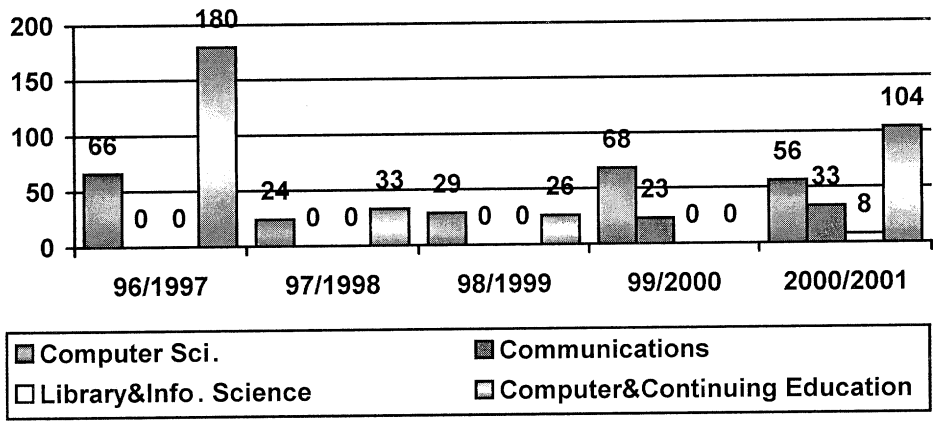
The main source of professionally trained manpower in the field of Information Science is the university of Qatar, with graduated majoring mainly in the following fields (see Figure 8).

(a) Computer Science;
(b) Information & Library Systems;
(c) Information Technology (leading to a Diploma).

By the end of Y2001, approximately 330 students had graduated with degrees or Diplomas in Computer Science, 27 students in Public Communications, and 8 students in Information & Library science.

The university teaching staff includes 22 and 17 professors in computer science and Information & Library science respectively. Moreover the computer center of the university of Qatar conducts seminars and training programs periodically for the purpose of spreading IT literacy and narrowing the " digital gap".

Figure 8. Break down of QU graduates by year and major



B. PRIMARY & SECONDARY SCHOOL EDUCATION

Education in the broader sense of the word is one of the tools in preparing and shaping the information society of the 21st century. Numerous educational measures were taken to effect the transition. These measures consist in:

(a) Streamlining school curricula so that secondary and university education the educational content becomes;

(b) Expansion of student Health Services;

(c) Ensuring the existence of proper school facilities taking into account the architectural aspect;

(d) The introduction of computer assisted learning at the elementary level, along with English, beginning with first grade students.

In the 1995 the Ministry of Education put in place a plan to exploit the computer potential as a teaching tool at the secondary level. The application of computer aided learning at the elementary level is now underway, and steps are being taken to:

(a) Introducing Computer Studies as a class activity in the third, forth, fifth and sixth grades;

(b) Granting certain privileges and incentives to outstanding schools

C. TECHNICAL TRAINING

Vocational training is a pivotal element in the future plans for developing knowledge–based society, supported by a skilled workforce, which in turn involves developing human resources to keep pace with the on-going progress in science and technology.

The state of Qatar has been striving to improve the administrative efficiency of the civil service and other public and private agencies. To this end, the government set up in 1996 the so-called Institute of Public Administration to train government employees and civil servants in carrying out their tasks efficiently. The institute has, over the past 5 years, implemented about 119 training programs, all of which stress the role of Information Technology & Information Systems as administrative tools. About 1943 trainees have already benefited from these programs.

V. ICT APPLICATIONS

A. ELECTRONIC GOVERNMENT (E-GOVERNMENT)

The Internet can be, and is, a tool for assisting governments in delivering services in a more efficient way. In Y2002 a decree (No.25) was issued for the establishment of a steering committee to oversee the implementation of the so-called E-government project. H.H the Emir has promised his continued support for the construction of a modern information society.

The committee set down a blue print consisting of 4 points outlining the scope of the proposed E-government project, and the principal tasks ahead:

(a) Project definition incorporating a strategic vision for implementing E-government;

(b) Assessment of the present degree of e-readiness, specification of E-government services, information protection, based on Public Key Cryptography (PKI);

(c) Specification of: the IT component of the project, operational plan and the organizational structure;

(d) Developing a scheme to, stimulate public awareness of E-government, analyze the legislative ramifications, and maintain quality control.

Close to 1350 services have been earmarked as candidates for addition to the current list. About 130 services can potentially be delivered via the government portal. As a matter of fact, 20 such services have already been selected for during the first phase of the project-see Table 1.

Table 1. The services available via Qatar's E-government Portal

Service	Ministry/Agency	Starting Date
Obtaining a certificate of origin	Qatar Chamber of Commerce	Q2-2004
Payment of "Zakat" tax	Ministry of Endowments	Q3-2004
University enrollment	University of Qatar	Q4-2003
School enrollment	Ministry of Education	Q2-2003
Issuance of work permits	Ministry of Civil Service	Q3-2004
Employment Application (Qatari nationals)	Ministry of Civil Service	Q3-2003
Issuance of Trade license	Ministry of Finance	Q1-2003
Payment of Import duties	Ministry of Finance	Q3-2003
Passport Applications	Ministry of Interior	Q3-2004
Issuance /Renewal of residency permits	Ministry of Interior	Q4-2004
Visa applications	Ministry of Interior	Q4-2003
Renewal of Road License	Ministry of Interior	Q2-2004
Renewal of Driving license	Ministry of Interior	Q2-2003
Payment of traffic fines	Ministry of Interior	Q2-2004
Payment of Electricity bills	Electricity & Water Authority	Q2-2003
Issuance of industrial license	Ministry of Industry & Energy	Q4-2004
Issuance of birth certificates	Ministry of Public Health	Q1-2004
Application for health card	Ministry of Public Health	Q3-2003
Application for Food Import License	Ministry of Public Health	Q1-2005

B. HEALTH CARE

The Health sector has progressed considerably during the past 5 years, in terms of organization and structure. The Ministry of Health is intent upon introducing the latest technology into the Health Service, which includes setting up proper health information retrieval systems, automating financial operations, inventory checking, maintaining and updating health records, and finally building an infrastructure within the E-government framework.

The following project started in Y2000 have since been implemented:

(a) Modernization of the network connecting various health centers with the central database;

(b) Development of various schemes dealing with health care management issues (see Table2);

(c) Conducting training sessions to spread computer literacy amongst doctors and personnel attached to the Ministry of Public Health.

Table 2. Current Schedule of Health Programs

Phase I	Phase II	Phase III
Master patient index	Labs (modules)	Planned preventive Maintenance
Medical records	Operating theater	
Inpatients	Blood transfusion	Executive information system
Outpatients		Nursing management
Accident and		Psychology subsystems
Emergency		
Pharmacy		Dental subsystems
CSSD		Clinical costing
Patient billing		National database
Account payable		
Accounts Receivable		
General ledger		
Fixed assets		
Inventory		
Purchasing		
Personnel and payroll		

C. PUBLIC SERVICES DEVELOPMENT PROJECT

The royal decree (No.19) issued in Y2002 aimed at:

(a) Increasing the efficiency of government services;

(b) Improving the quality of services while trying to lower or limit costs;

(c) Developing the organizational structure of the government bureaucracy, and modernizing legislation relating to public services;

(d) Adopting plans and procedures to monitor performance.

No modern government can develop its services without taking into account the role of Information Technology in the development process. In recognition of the vital role of IT, the project will address the following four concerns:

(a) A procedure for citizens to have easy access to government services;

(b) An efficient procedure for passing information to the private business community and the public at large;

(c) Providing a system of integrated services;

(d) Improving the quality of services.

The groundwork for achieving the above objectives will be carried out in three phases:

(a) *Phase 1:* Outlining a strategic vision for the role of IT;

(b) *Phase 2*: Specification of the necessary infrastructure and the objectives that this infrastructure will be supporting;

(c) *Phase 3:* Drawing up a plan of execution.

D. PROMOTION OF COMPUTER LITERACY PROJECT

Many people compare the social impact of the Internet with that of the telephone when the latter was first invented; but the fact is that it took about 75 years for the telephone to reach 50 million users, whereas within 4 years, the number of Internet users rose to about 50 million.

In light of the above, the so called " big 8" countries have for the past six years been expressing their concern about the growing digital gap between various social strata, and between nations generally. The government of Qatar is implementing a project for the diffusion of computer literacy. The project is intended to achieve the following objectives:

(a) Increasing the number of Computer literates across all Qatari social groups, and stimulating public interest in computer use, the Internet, and E-government;

(b) Promoting the successful implementation of E-government;

(c) Developing programmes to increase the number of people with computer skills to narrow the digital gap in the Qatari society, in the drive toward a digital economy;

(d) Facilitating access to Internet services by home users;

(e) Encouraging innovation and creativity while keeping pace with the fast developments taking place in Information Technology.

VI. CONCLUSION

We cannot but take note of the significant transformation that the state of Qatar has been undergoing since Y2000. The Information and Communication Technology strategic plan, now underway, and is designed to cover the period up until the end of Y2010. The plan is expected to narrow the digital gap between all social strata, improve the quality of life of citizens and foreign residents alike, improve government services, set up a proper working environment for the business community, and encourage innovative applications of IT.

In the drive towards creating an Information society, the state of Qatar has adapted a short term and a long-term strategy to modernize its ICT infrastructure. The E-government project is planned to offer 20 new online services by the end of Y2004, while continuing to combat computer illiteracy in order to narrow the digital gap within sections of the Qatari society, as a prelude to plug the similar gap existing within the state bureaucracy.

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Annex I

List of Companies

Qatar Computer Services Co.	شركة قطر لخدمات الكمبيوتر
Arab Computer Co	شركه الكمبيوتر العربية
National Co. for Computer Service	الشركة الأهلية لخدمات الكمبيوتر
Gulf Computer Systems	الخليج لأنظمه الحاسوب
Gulf Co. for Electronic Accounting	شركة الخليج للحسابات الإلكترونية
Systems Technico Electronic	تكنكو لأنظمه إلكترونية
Telecom Commercial Services	الاتصالات اللاسلكية للخدمات التجارية
Qatar Co. for Computer Systems	شركه قطر لأنظمه الكمبيوتر
Gulf Technologies Co	شركة تقنيات الخليج
Al-Jabr Business Systems	شركه الجبر لأنظمة الأعمال
WonderLand	عالم العجائب
International Co. for Computer Systems	الشركة الدولية لأنظمة الحاسب الآلي
Asala Computer Services	الأصالة لخدمات الكمبيوتر
Bayanat Computer Systems Co	شركة بيانات لأنظمة الكمبيوتر
Al Majaz Trading Co	شركة المجاز التجارية
Nobel Computer & Communications Systems	نوبل للكمبيوتر والاتصالات
Al Ghareeb Computer Center	مركز الغريب للكمبيوتر
Darweesh Computer & Communications Co	درويش للكمبيوتر والاتصالات
Elecronic Systems Micro Services	الخدمات الدقيقة للأنظمة الإلكترونية
Computer & Communication Center	مركز الكمبيوتر والاتصالات
Techno-Dell Computer Co	تكنوديل للكمبيوتر
ComputerHouse	بيـــت الكمبيوتر
Al-Jayida Computer & Electronic Services	الجيدة للكمبيوتر والخدمات الإلكترونية
Computer Man	رجل الكمبيوتر
Olympia Computer Co	أولمبيا للكمبيوتر
Logitech Information Co	شركه المعلومات التقنية المنطقية
ORIENTAL Computer Center	المركز الشرقي للكمبيوتر
Qatarcom	قطر كم
Pascal Computer Technologies	باسكال لتقنيات الكمبيوتر
Computer World	عالم الكمبيوتر
Gulf Computer Systems Co	شركة الخليج لأنظمة المعلومات
Intergraph	انتر جراف
National Computer Center	مركز الكمبيوتر الوطني
Family Computer Co	كمبيوتر العائلة
Apple Computers Center	مركز أبل
EDGE Computer Distribution Co	إيدج لتوزيع الكمبيوتر
Progress for Computer Services	التقدم لخدمات الكمبيوتر
American Home Computer	بيت الكمبيوتر الأمريكي
Nest M.E Est	مؤسسة نست الشرق الأوسط
Computerland Est.	مؤسسة أرض الكمبيوتر

Annex II

INFORMATION SOCIETY INDICATORS FOR QATAR

Indicator	*Y2000	*Y2001	*Y2002
1. Basic Background Indicators			
1.1 Population	578510	597022	616151
1.2 Area	11493	11493	11493
1.3 Density	NA	NA	NA
1.4 Urban Population	NA	NA	
1.5 Adult literacy	NA	**88.7	NA
1.6 Poverty	NA	NA	NA
1.7 GNI per capita	NA	NA	NA
1.8 GDP Growth	43.3	-3.5656	1.984
2. Telecom Infrastructure			
2.1 Fixed lines (total)	NA	NA	1.80
2.2 Domestic (lines per household)	NA	NA	2.6
2.3 Urban (%)	NA	NA	NA
2.4 Waiting list (total number)	0	0	0
2.5 Waiting time (average)	1-week	1-week	1-week
2.6 revenue per line ($)	NA	NA	NA
2.7 Cost of local call ($ per 3 minutes)	None	None	none
2.8 Cost of call within region ($ per 3 minutes)	NA	NA	1.5
2.9 Cost of call to US ($ per 3 minutes)	NA	NA	2.0
2.10 Number of fixed lines operators	1	1	1
2.11 ISDN lines	NA	NA	NA
2.11.1 Initial cost ($)	NA	NA	NA
2.11.2 Monthly charge ($)	NA	NA	NA
2.12 DSL lines	NA	NA	NA
2.12.1 Initial cost ($)	NA	NA	NA
2.12.2 Monthly charge ($)	NA	NA	NA
2.13 Leased lines	NA	NA	NA
2.13.1 Initial cost ($)	NA	NA	548
2.13.2 Monthly charge ($)	NA	NA	206

Annex II (*continued*)

Indicator	***Y2000**	***Y2001**	***Y2002**
2.14 Cable	NA	NA	NA
2.14.1 Initial cost ($)	NA	NA	NA
2.14.2 Monthly charge ($)	NA	NA	NA
2.15 Outgoing traffic (minutes per subscriber)	NA	NA	NA
2.16 Incoming traffic (minutes per subscriber)	NA	NA	NA
2.17 Mobile lines	NA	NA	NA
2.18 Number of mobile operators	1	1	1
3. Media Infrastructure			
3.1 Radios	3 channels	3 channels	3 channels
3.2 Television	3 channels	3 channels	3 channels
3.3 Satellites	NA	NA	NA
3.4 Daily Newspapers	5	5	5
4. Computers and Internet			
4.1 Personal computers	NA	NA	NA
4.2 Personal computers in education	NA	NA	NA
4.3 Percentage of computers that are networked	NA	NA	NA
4.4 Internet subscribers	10484	13500	19305
4.5 Internet users	NA	NA	60000
4.6 Internet hosts	NA	NA	430
4.7 ISP's	1	1	1
4.8 ISP monthly charges ($)	NA	NA	NA
4.9 Telephone usage charges ($)	NA	NA	NA
4.10 Available national bandwidth	NA	NA	155mb/s
4.11 Hosting availability	NA	NA	NA
4.12 Secure servers	NA	NA	NA
5. ICT expenditure			
5.1 Telecom expenditure (million $)	NA	NA	NA
5.2 IT expenditure (million $)	NA	NA	NA
5.3 Percentage of GDP (%)	NA	NA	NA
5.4 ICT per capita ($)	NA	NA	NA

Indicator	*Y2000	*Y2001	*Y2002
6. Capacity building			
6.1 Scientists and engineers in R&D	NA	NA	NA
6.2 R&D expenditure (% of GNI)	NA	NA	NA
7. ICT Government and Business Environment			
7.1 e-readiness index	NA	NA	NA
7.2 e-government index	NA	NA	NA
7.3 IPR enforcement	NA	NA	NA
7.4 Compliance with WTO	NA	NA	NA
7.5 Basic telecom agreement	NA	NA	NA
7.6 Reference paper	NA	NA	NA
8. Laws and Regulations			
8.1 Patent law	NA	NA	y
8.2 Trademark law	NA	NA	Y
8.3 Copyright law	NA	NA	Y
8.4 IT agreement	NA	NA	Y
8.5 e-commerce law	NA	NA	NA
8.6 e-signature law	NA	NA	NA
8.7 Piracy law	NA	NA	NA
9. ICT Policy			
9.1 ICT strategy	NA	NA	Y
9.2 ICT plan of action	NA	NA	Y
9.3 National initiatives	NA	NA	Y

* Mid of the year

** Labor force survey

NA=Not Available.