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BAHRAIN AND THE INFORMATION SOCIETY

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ABSTRACT

The report is compiled from various studies conducted on Bahrain and from the statistics published by the Directorate of Statistics, Kingdom of Bahrain and this report focuses on the key issues pertaining to the development of an information society in the Kingdom of Bahrain.

The Government wants Bahrain to be at the forefront of development in the new global economy. In order to get there, Bahrain must establish the best environment for an information society in the region. Electronic access to government services will become increasingly important to citizens and by 2005 Bahrain plans to have the majority of public services available online.

The E-government strategy is a fundamental element to developing an information society. This document provides an outline of the country's e-Government initiative. It also provides an overview of information and communication technology (ICT) developments in other sectors.

IT in the Government is planned and implemented by the Central Informatics Organization (CIO). Traditionally, Government of Bahrain has been in the forefront of IT developments as compared to other countries in the region. The Government Data Network (GDN) connects various Government Ministries and Directorates and enables seamless information sharing. The Central Population Register (CPR) System which included unique identifiers for People, Land and Establishments in a central database which was established in 1984 had been another milestone achievement for the government towards its move to an information society.

The Government of Bahrain is focusing a national effort on leading the region in information technology. The E-Government strategy undertakes to implement a series of related projects, or program of projects, to improve the effectiveness of information systems and technology within the Government of Bahrain. The strategy provides a framework for planning and action across the whole public sector, covering Bahrain local government and the executive agencies, non-departmental bodies and Statewide Government departments. The overall Bahrain e-Government Program consist of an infrastructure phase and an applications phase, each lasting for two years and will focus on five areas of architecture: security, information, applications and management in will include several strategic projects.

Bahrain has featured high in the e-Government ranking reports published by by the UN Division for Public Economics and Public Administration (UNDPEPA) and the American Society for Public Administration (ASPA) as well as in an independent report published by Brown University. The establishment of e-Government in Bahrain, through separate ICT projects undertaken by various government departments, is expected to cost between US\$150 and \$200 million

Bahrain has a single telecommunications company and it has a monopoly over virtually all telecommunications, data transmission and Internet services in Bahrain. The current level of telcom services in Bahrain is adequate for the current needs of the country but major improvements must be introduced if Bahrain is to become an Information Society. Internet, PC, Telephone and TV Penetrations are considered to be one of the highest in Bahrain as compared to all other countries in the GCC. This will greatly contribute and will act as a major impetus in realizing Bahrain Government's vision of an e-Society. Bahrain has already passed e-Commerce law which will act as a legal framework for constituting an information society.

Kingdom of Bahrain has already got many ingredients in place for building an information society in the near future. The Government Data Network and Central Population Register (CPR) will provide the foundation where as the e-Government applications will provide an electronic gateway for the citizen services. The development in the educational and health sectors will accelerate the momentum in terms of human resources. The relatively small geographic size and population will expedite the development processes. The recent political reforms and move towards democracy will provide transparency and more efficiency in the utilization of funds. One of the major drawbacks is that there is no single executive body to coordinate the move towards the information society. However the strategies of the ministries and government organizations, telecommunication company and all other stakeholders are expected to converge to a single vision of developing an intelligent and digital kingdom through the efforts of Economic Development Board, e-Commerce Committee and the Central Informatics Organisation.

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INTRODUCTION

This document is submitted to the Economic and Social Commission for Western Asia (ESCWA), United Nations, as contribution to the Regional Preparatory Conference (4-6 February 2003) in preparation for the World Summit on the Information Society (WSIS).

The report is compiled from various studies conducted on Bahrain and from the statistics published by the Directorate of Statistics, Kingdom of Bahrain and this report focuses on the key issues pertaining to the development of an information society in the kingdom of Bahrain.

The Kingdom of Bahrain is an archipelago of low lying island located in the Arabian Gulf of the eastern shore of Saudi Arabia.

Frequently called the *Pearl of the Arabian Gulf*, Bahrain has a history of more than 5,000 years of civilisation, from the mists of time to a vibrant present under a stable and prosperous government.

While relatively small in population, land area and resources Bahrain has achieved a high level of social and economic development in a short period. The road network, international airport, telecommunications, public services, medical facilities and university are all recognised as being among the best in the world.

At the moment Bahrain is going through sweeping changes in the political front under the leadership of His Majesty, Sh. Hamd bin Is Al-Khalifa, the King. Bahrain is moving towards a democracy after successfully conducting elections for Parliament and Municipal councils.

New technology offers unprecedented opportunities for modernization throughout the society. Gone are the days when technology was a consideration only for technocrats. We are witnessing the start of an information age which is radically changing the way we live and conduct business and the way we as citizens get many of the services and goods we need. The Government wants Bahrain to be at the forefront of development in the new global economy. In order to get there, Bahrain must establish the best environment for an information society in the region. Success in this emerging knowledge economy will be vital for the future prosperity of the Kingdom.

The Kingdom foresees that it must try and guarantee that all residents in the country can benefit from the new technologies and the new economy that it will bring. It needs to develop essential Laws and Policies and to bridge the digital divide. Therefore it has set a target that by 2005, all Bahraini citizens should have access to the Internet, will be given a free government home page and a free E-mail account either in their own homes or through community access points. Bahrain need to establish Information and Communications Technologies in the national education curriculum and in partnership with the private education sector, and need to invest heavily in the educational institutions and in lifelong learning programs to ensure that skills in using the new technology are made available to the whole population.

Information and Communication Technology (ICT) can satisfy the “needs and wants” of citizens however, the Government sector must grasp new ways of thinking, new ways of doing business, new alliances and new technology. This is vital in order to give citizens the services they

want, the way they want them and when they want them and with the minimum cost and bureaucracy. Electronic access to government services will become increasingly important to citizens and by 2005; Bahrain plans to have the majority of public services available in this way.

The purpose of the World Summit on the Information Society, is to develop a “common vision and understanding of the information society and the adoption of a declaration and plan of action for implementation by Governments, international institutions and all sectors of civil society”

According to the WSIS website, a universal definition of the information society does not really exist. However, the information society is a phenomenon which permeates every aspect of our lives, affecting every cell of society and every sector of activity. Three elements can nevertheless be considered as constituting the basis of the information society, namely, Information and knowledge; Proliferation of information and communication technologies (ICT) and Access to and use of ICTs.

In this context, this paper presents a report on Bahrain on the areas that has a direct bearing on building an information society. These sectors are e-Government, Telecommunications, Education, Human Resources, etc.

I. THE KINGDOM OF BAHRAIN

The Kingdom of Bahrain is an archipelago of low lying island located in the Arabian Gulf of the eastern shore of Saudi Arabia.

Frequently called the *Pearl of the Arabian Gulf*, Bahrain has a history of more than 5,000 years of civilization, from the mists of time to a vibrant present under a stable and prosperous government.

While relatively small in population, land area and resources Bahrain has achieved a high level of social and economic development in a short period. The road network, international airport, telecommunications, public services, medical facilities and university are all ☐armonious as being among the best in the world. Although great emphasis is naturally placed on the development of its own citizens, due to its large expatriate population Bahrain has a marvelous multi-national mix of nationalities, all living harmonously together in a completely unique mix of cultures.

Bahrain has emerged as the freest economy in the Arab world, ranking the fifteenth most liberalized economy on global level, according to the 2002 Index of Economic Freedom, published by *The Wall Street Journal* and the Heritage Foundation.

| Bahrain Statistics | |
|------------------------|---|
| Population: | 620,000 |
| Arabic speakers: | About 70% of population (nationals & Arab expats) |
| Age structure: | 60% of population under 25 |
| Adult literacy rate: | Male: 87%, Female: 73% |
| National GDP: | US\$8.5 billion |
| GDP per capita: | US\$12,500 |
| Fixed telephone lines: | 200,000 |
| Mobile phones: | 340,000 |
| Mobile penetration: | 53 per hundred people |
| PC penetration: | 16.00 per 100 people |
| Internet users: | 160,000 (August 2002) |
| Internet penetration: | 22% of population |
| E-banking adoption: | 17% of Internet users (2001) |

Source: Matar Research Group

The kingdom possesses most major elements conducive to the rise of an e-Government and a “knowledge society”. These include a healthy economy, a strong currency pegged to the US dollar, an advanced telecommunications infrastructure, and a government that is undertaking far-reaching political reforms. It also has a young population and a skilled workforce, a relatively high Internet penetration, and a leadership that is strong on the adoption of information and communications technology (ICT) so as to join the New Economy.

II. IT IN THE GOVERNMENT

IT in the Government is planned and implemented by the Central Informatics Organization (CIO). Traditionally, Government of Bahrain has been in the forefront of IT developments as compared to other countries in the region. It was perhaps the first country in the region that introduced a computer in the government.

A. GOVERNMENT DATA NETWORK (GDN)

After the introduction of the first computer back in 1978, the Government implemented a data communication network in 1981 for intra ministry communication.

The network, called Government Data Network (GDN) connects various Government Ministries and Directorates and enables any government department which is connected to the GDN to access applications and data at any ministry, if authorised. The GDN presently has more than 150 remote sites with thousands of nodes linked to it. Currently, GDN is used to deliver the following applications: Immigration and Passport System, Central Population Registration System, Customs and Ports Systems, Traffic and Licensing System, Commercial Registrations System, Labour System, Financial Management Information Systems (FMIS), Human Resources Information System (HoRISon), Ministry of Health Applications, Government Wide Email and Portal, and Government Wide secure Internet access.

The government has recently signed up with Batelco and Cisco to upgrade the GDN into the one-gigabit per second Ethernet connection. This will link all major government departments and their various applications on a unified platform that acts as the “nervous system” of the forthcoming e-Government

B. CENTRAL POPULATION REGISTER

In 1984 Kingdom of Bahrain achieved another milestone by implementing Central Population Register (CPR) Systems which included unique identifiers for People, Land and Establishments in central database that could be shared to all government ministries and establishments via Government Data Network. Thus the Government has started its move towards digital state way back in eighties.

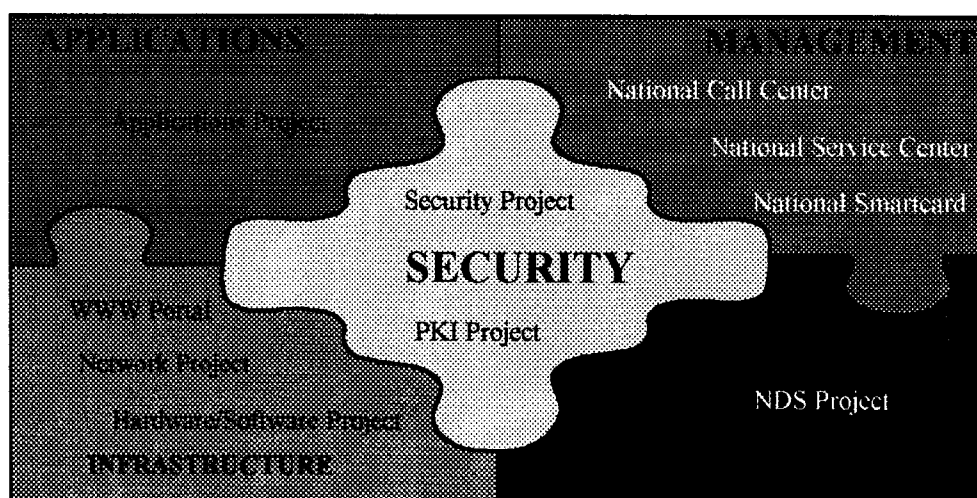
III. E-GOVERNMENT

The Government of Bahrain is focusing a national effort on leading the region in information technology. A significant part of this effort entails enabling all of its current and future computer systems to function over open networks such as the Internet and deploying them using new technology infrastructures(e-Systems). The transformation to e-Government is supported by an e-Government Strategy that maps out a blueprint for the transformation process and gives a high level direction to all communities of the (State, Regional and Municipal) public authorities. The e-Government strategy undertakes to implement a series of related projects, or program of projects, to improve the effectiveness of systems and technology within the Government of Bahrain.

The Strategy is a conventional IT strategy which proposes technical solutions to a defined set of business and information needs. The business of government is too varied and complex, and the range of its dealings and contacts too great for that to be easily and quickly achieved. Instead the strategic direction is set for the way the Bahrain public sector will transform itself by implementing business models which exploit the possibilities of new technology. It is informed by the rapid development of new ways of doing business in the wider economy, in the public sector in other countries and by leading-edge practitioners in the Bahrain public sector. It identifies the respective roles of public sector bodies to deliver the benefits of a common approach.

The strategy provides a framework for planning and action across the whole public sector, covering Bahrain local government and the executive agencies, non-departmental bodies and Statewide Government departments. In Ministries and Bahrain Governates , the devolved administrations are responsible for delivering allotted functions and for the preparation of appropriate IT strategies that converge with this main strategy. The overall Bahrain e-Government Program consist of an infrastructure phase and an applications phase, each lasting for two years and will focus on five areas of architecture: security, information, applications and management

A. E-GOVERNMENT STRATEGY MODEL



The e-Government strategic program is made up of I.T. components, each being the focus of a project. The Program Strategy that include the following active component projects:

- Establishment of a program/project office.
- Establish the Security Forum. (Security Strategy Implementation Project 1)
- Implementation of an Architecture Adherence Policy
- Implementation of the Central Technical Platforms (Hardware and Software Upgrade Project).
- Implementation of the required Network topologies , protocols and bandwidth(Network Upgrade Project).
- Establishing the Contents of the National Data Set.
- Implementing the National Dataset
- Transforming selected Applications
- Development and Implementation of a new Disaster Recovery Plan (DRP) Project.
- Implementation of the remainder of the Security Strategy
- Transformation of the remaining Applications.
- Government Portal Project
- Public Key Infrastructure (PKI) Project
- National Call Centre Project
- National Smartcard Project
- National Service Centre Project

B. BAHRAIN E-GOVERNMENT READINESS

Bahrain featured high in an e-Government report published in May 2002 to assess e-Government progress of the United Nations 190 member countries. 'Benchmarking e-Government: A Global Perspective' – made jointly by the UN Division for Public Economics and Public Administration (UNDPEPA) and the American Society for Public Administration (ASPA) – placed Bahrain high in four categories of e-Government development.

An e-Government index devised for the report gave Bahrain a rating of 2.04, compared to a global mean of 1.62 and the highest score of 3.11 achieved by the United States. The index averaged 1.76 for the Middle East region, with Israel ranking highest at 2.26, then the United Arab Emirates 2.17, Kuwait 2.12, and then Bahrain, which was followed closely by Lebanon at 2.00. Bahrain ranked slightly above the European mean index of 2.01. The index, which had a ceiling of 3.25, gave South America an overall rating of 1.79, Asia; 1.38, and Africa; 0.84.

In determining the e-Government index for individual countries, the UN study took into account demographic statistics and factors such as the level of human development and Internet, PC

and mobile phone penetration, in addition to ICT infrastructure and the degree of government online presence and level of services.

Yet another study by Brown University in Rhode Island, US, which published a global e-Government survey in September 2002, the Bahrain Government has a fair standing in terms of e-Government progress when compared with 198 other countries. This study presented Brown University's second annual update on global e-government, i.e., the delivery of public sector information and online services through the Internet.

Overall Bahrain scored a ranking of 52% and stood 13th on world index. Bahrain outperformed all other GCC countries in many areas in the study. (Please see the tables below)

Table. Top E-Government Countries

| | | | |
|----------------------|------|----------------------|------|
| <i>Taiwan</i> | 72.5 | <i>South Korea</i> | 64.0 |
| <i>Canada</i> | 61.1 | <i>United States</i> | 60.1 |
| <i>Chile</i> | 60.0 | <i>Australia</i> | 58.3 |
| <i>China</i> | 56.3 | <i>Switzerland</i> | 55.4 |
| <i>Great Britain</i> | 54.8 | <i>Singapore</i> | 53.5 |
| <i>Germany</i> | 52.6 | <i>Mexico</i> | 52.0 |
| <i>Bahrain</i> | 52.0 | <i>Qatar</i> | 52.0 |

Table. E-Government Country Ratings for GCC

| Country | 2001 | 2002 |
|----------------------|-------------|-------------|
| Bahrain | 26.2 | 52.0 |
| Qatar | 12.8 | 52.0 |
| Saudi Arabia | 36.8 | 38.0 |
| United Arab Emirates | 26.1 | 38.0 |
| Oman | 29.1 | 36.0 |
| Kuwait | 28.7 | 32.0 |

C. COST OF E-GOVERNMENT

The establishment of e-Government in Bahrain, through separate ICT projects undertaken by various government departments, is expected to cost between US\$150 and \$200 million

D. E-GOVERNMENT RESPONSIBILITY

There are several government bodies involved in the overall project. The e-Commerce Panel, which consists of cabinet ministers and headed by the Crown Prince, Economic Development Board (EDB) and the Central Informatics Organisation (CIO) are the three executive bodies driving the e-Government move in Bahrain.

The e-Commerce panel is responsible for creating the necessary legislation to allow e-Commerce to flourish, and for devising strategies to attract prominent players in to the field.

The CIO is responsible for the over all IT strategy and the infrastructure for the entire government. The CIO hosts the e-Government Web portal (www.bahrain.gov.bh), and is responsible for Arabising the international content management system (CMS) from PostNuke.

Bahrain's Economic Development Board (EDB) was established in April 2000 as an autonomous semi-private agency – to lure foreign investment in six key 'economic clusters' including IT and telecommunications. The EDB has also been increasingly assisting in the creation of the e-Government. It is charged with formulating and overseeing an economic development strategy for Bahrain, which seeks to turn the island into a hub for global business and investment. With assistance from other government bodies, the EDB has drafted an e-Commerce law to govern online transactions.

E. MINISTRIES

The Bahrain Government has 22 ministries. These Ministries are developing new processes and systems to align with the national e-Government strategy.

1. Ministry of Health

The Ministry of Health is spearheading the single most ambitious and costly project in the e-Government drive in Bahrain. Running at a cost of BD20 million (\$53 million) and approved in September 2001, the Strategic Health Information System will allow clinics, physicians and health officials to share healthcare related information and have instant access to tens of thousands of updated medical records over an internet-linked intranet. The project, launched in April 2002, will pass through four phases over a period of six years. Phase One, for completion by end 2003, focuses on setting up a new infrastructure and basic health information services. Existing legacy systems will be replaced in Phase Two – after historical data is retrieved and new applications installed. Subsequent phases will deal with electronic patient records and other end-products before the entire medical information system is made available online. The Ministry of Health already has a website (www.moh.gov.bh) where forms can be completed and submitted online, in addition to online directories.

2. Ministry of Education

Bahrain was the first GCC country to introduce government-provided education in 1919. Having obtained a head-start, Bahrain today boasts a number of public schools, at which education is provided to students free of charge, as well as many top-rate, fee-based private schools, offering American, British, French, Indian, Urdu and Japanese education. Bahrain is ranked as having the

highest literacy rate amongst Arab countries from 1995-2000, according to the United Nations Human Development Report (2001)

Bahrain has many training institutes that teach computing certificates related to Microsoft, Adobe, Sun, Cisco and other leading IT companies. Bahrain Training institute, Bahrain Institute of Technology, Aptech, NIIT, and New Horizon are some of the well-known IT institutes in Bahrain.

In addition, there are several language teaching centers, including the Polyglot School, the British Council Teaching Center, the Cambridge School of English, Berlitz and Alliance Francaise. Correspondence programs are also available with the University of Maryland and DePaul University. Vocational training facilities in Bahrain include the Bahrain Institute for Banking and Finance, Bahrain Training Institute, and the Gulf College for Hospitality and Tourism.

Bahrain has more than 115,000 students in some 200 public schools. Being a major area for ICT development as part of the e-Government and e-Learning environment, the public education sector in Bahrain is bound to draw substantial government funds – once the Ministry of Education formulates a strategy and develops a plan of action. So far, the ministry has arranged for all public intermediate and secondary schools in Bahrain to be connected to the Internet, and the process of upgrading PC labs and improving on Internet use is ongoing. The ministry, however, is carrying out further studies and is looking into the experience of other nations before it decides on its approach and priorities. Meanwhile, ICT development in the tertiary education sector is taking place in two institutions; the University of Bahrain and the nascent Arab Open University. The University of Bahrain has boosted its use of the Internet from mere dissemination of information to a two-way communication. Students can select their courses, and apply for admission and registration using online forms – but the university's bilingual (Arabic, English) website does not offer online payment facility for courses. The university, however, is planning further ICT development and Internet integration to bring more of the learning and administrative processes online, such as e-Courses: which the university is currently developing. The Arab Open University is another significant factor in the digital migration of education in Bahrain – since it is based on distance learning. Here, students use the Internet as the main channel for accessing teaching material and assignments, as well as for interacting with instructors and holding discussions with their classmates. The university is headquartered in Kuwait, but it will have a campus in Bahrain, which will be ready to accept distance learners in four initial study areas. The project is funded by the Arab Gulf program for the support of United Nations Developmental Organizations (AGFUND) and accredited by the Open University of London. The cost of the university in its first phase will reach \$32 million and it will have offices in six Arab countries. Much of the cost will go on ICT infrastructure which will initially handle about 4,000 students from around the Middle East.

3. Ministry of Commerce and Industry

With a two-way communication infrastructure and online payment facility, Commerce & Industry ministry's website (www.commerce.gov.bh) is currently one of the first sites giving online delivery of government services such as Commercial Registration (CR) and its renewal.

As the second Phase of improving the efficiency of CR process Government of Bahrain has initiated eInvestorPilot Project (eIPP), which is a pilot project to test an e-government solution and a methodology to be used to transform the activities of the government into a more effective, efficient and economical processes. The process selected for the pilot is Commercial Registration

(CR), which is facilitated by the Ministry of Commerce and Industry (MOCI). The CR process requires to be coordinated through a number of other ministries, depending on the nature of the business and the status of the investor. It is the vision of the MOCI to provide the investors with a “single window” and “single visit” service. This is a key requirement to encourage potential investors to select Bahrain as the preferred place for investments. It is also key to achieve high operational performance and customer orientation, which is monitored through performance measurement processes.

4. Ministry of Interior

The Directorate of Traffic and the General Directorate of Immigration and Passports under the Ministry of Interior are currently developing applications where online services for traffic and visa services could be made possible. There is also a plan to link all the police stations with wireless voice and data network which will be connected to GDN via a gateway.

5. Ministry of Finance and National Economy

Ministry of Finance and National Economy (MOFNE) has upgraded its Financial Management Information System (FMIS) to a web enabled system which can be accessed using the GDN by all user ministries or via Internet.

6. Ministry of Electricity and Water

Ministry of Electricity and Water also has got major plans to introduce web enabled systems and make many of its customer services available online. The Project is well underway and is expected to be completed within the first phase of the e-Government.

7. General Directorate of Customs and Ports

The General Directorate of Customs and Ports is developing its web enabled system in order to streamline its business processes and increase the quality of services. A bilingual website (www.bahraincustoms.gov.bh) is undergoing development of online transactions and payment of customs duties and taxes through online banking facilities (I-Net) and an Electronic Data Interchange (EDI) system.

8. Civil Services Bureau

Civil Services Bureau (CSB) has recently commissioned its centralized Human Resources System using Oracle HRMS applications.

9. Bahrain Duty Free

This is a well-developed stage-two level website where travelers can buy goods online and participate in raffles. Content, however, are provided only in English.

IV. E-VOTING

Bahrain held the first Arab national referendum online when the Central Informatics Organization devised a solution based on technologies from PostNuke and Symbol and put it to the test in February 2001. The e-referendum was successful in terms of its accuracy and time-saving when polling more than 200,000 voters. This was partly due to the assignment of a unique number (Central Population Registration number) to every Bahraini and resident of Bahrain. The CPR was incorporated into a card with encrypted computerized information about the user in the form of a two-dimensional barcode. The CPR card, which was inspired by a Scandinavian model, allows its holder to swipe it at polling stations for instant identity verification. The card now facilitates all kinds of interaction between the electronic government and the people. The government is also looking into the use of the CPR number in smart cards to allow wider range of electronic use by cardholders.

V. TELECOMMUNICATIONS

Bahrain has a single telecommunications company which is Batelco. Batelco has a monopoly over virtually all telecommunications, data transmission and Internet services in Bahrain.

The current level of Batelco services in Bahrain is adequate for the current needs of the country but major improvements must be introduced if Bahrain is to become an Information Society. A world-class telecommunications infrastructure is a key enabler to growth in IT, especially in the era of convergence of telecommunications and information technology.

The telecommunications infrastructure in Bahrain is comparable in certain features to global standards, yet there are many aspects that lag global standards. The main features of the telecommunications services available in Bahrain include the following:

- Total digital network including digital switches and inter-exchange fiber optical links
- Digital international circuits to all business and financial centers in the world
- A purpose-built environment (Facility Management Center) for the installation and a 24-hour management of customer telecommunications equipment
- Availability of advanced services including ISDN, ATM, LANConnect, Frame Relay and VSAT
- Immediate provision of GSM mobile and Internet services, with roaming to over 50 countries
- Mobile fax and data service through the GSM network

The following are some of the areas where the current telecommunications infrastructure falls short of global standards:

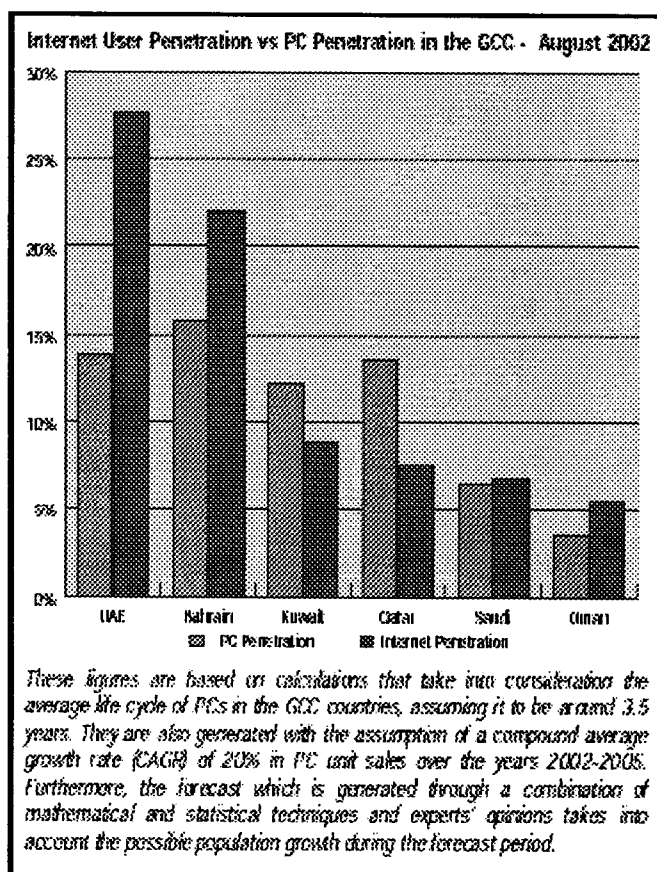
- Limited bandwidth
- High prices
- Limitations of service
- Monopoly of provider

Plans are underway to open the telecommunications market in Bahrain to competition. Government has recently set up a new autonomous body called Telecommunication Authority to regulate the telcom sector. A license to the second provider is expected to be granted by April 2003. This will allow specialized international telecommunications and IT companies to capitalize on a well-established infrastructure that will continue to develop as technology evolves. Furthermore, an e-Commerce Committee and a Telecommunications Committee have been created to ensure that all necessary aspects of these sectors are discussed, examined and implemented where appropriate.

VI. INTERNET, PC AND TELEPHONE PENETRATION

A. INTERNET PENETRATION

Internet penetration in Bahrain is second highest in the Arab World. The number of Internet users in Bahrain is estimated at 150,000 users. According to 2001 Census Results Published by the Directorate of Statistics, Central Informatics Organisation, out of total 105686 households in Bahrain 19191 households are connected with the internet.

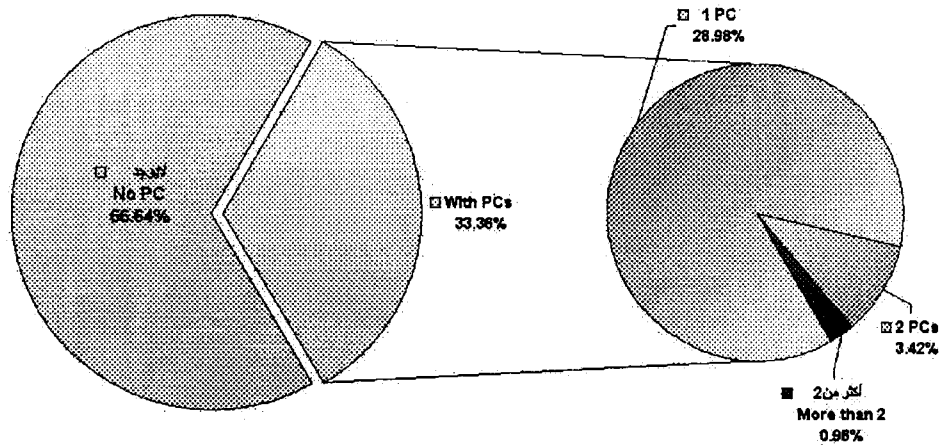


Source: Madar Research Group

B. PC PENETRATION

Personal Computer penetration in Bahrain is the highest percentage-wise in the Arab world. According to the Census 2001 results, out of 105686 households 35255 households had at least one PC at home. This accounted for a 33.36% of households having at least one PC at home. Please see the graph below.

رسم بياني
نسبة الوحدات السكنية بحسب عدد أجهزة الحاسب الألي المستخدمة 2001م
Percentage of Housing Units By Number of Personal Computers - 2001



| GCC Countries Ranked by PC Penetration - August 2002 | | | | | |
|--|-------------------|----------------|----------------|----------------------|-----------------------|
| Country | PC Installed Base | PC Penetration | Internet Users | Internet Penetration | Internet Users per PC |
| Bahrain | 107,000 | 15.74% | 150,000 | 22.06% | 1.40 |
| UAE | 450,000 | 13.85% | 900,000 | 27.69% | 2.00 |
| Qatar | 107,000 | 13.54% | 60,000 | 7.92% | 0.56 |
| Kuwait | 280,000 | 12.17% | 205,000 | 8.91% | 0.73 |
| Saudi Arabia | 1,500,000 | 6.38% | 1,000,000 | 6.61% | 1.07 |
| Oman | 95,000 | 3.52% | 150,000 | 5.56% | 1.58 |
| Total | 2,529,000 | 7.64% | 3,065,000 | 9.23% | 1.21 |

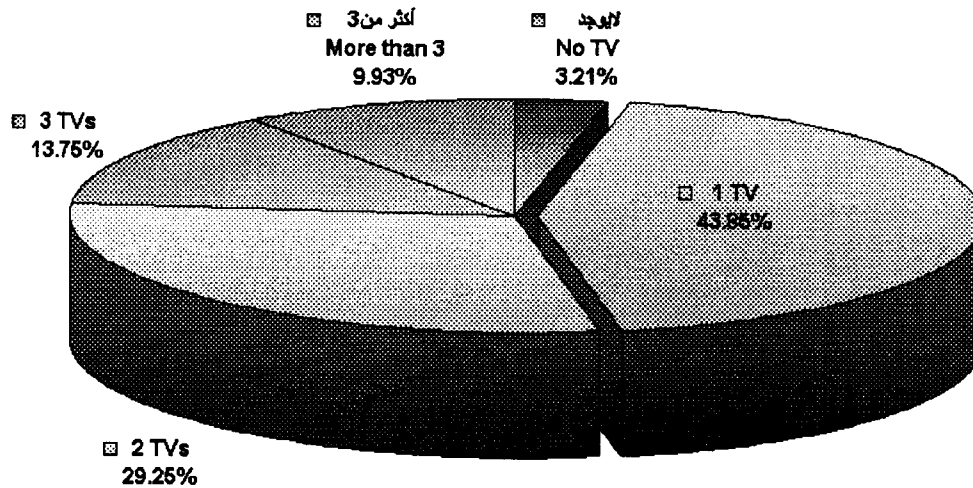
C. MOBILE AND TELEPHONE PENETRATION

More than 50% of households and 100% of businesses have a fixed-wire phone connection. The numbers of fixed line telephones are estimated to be 200,000. Mobile phone penetration is estimated as 50%.

D. TV PENETRATION

Census 2001 result also indicates one of the highest TV penetration in the Kingdom. Out of 105686 total households 102289 households (96.79%) had at least one TV at home. Batelco is planning to introduce internet thorough cable TV very soon. This will create easy and inexpensive means to access ICT in most of the homes.

Graph 36
- نسبة الوحدات السكنية بحسب عدد التلفزيونات 2001م
Percentage of Housing Units by Number of TVs - 2001



VII. E-BANKING

Internet banking has made real headway in Bahrain, with adoption rate standing at around 20 percent of all Internet users – equivalent to the rate in many Western countries. Several Bahraini – or partly Bahraini – banks are now offering e-Banking, while most other banks are planning or implementing online services. The Internet banking thrust, spearheaded by a number of national banks such as Ahli United Bank, the Bank of Bahrain and Kuwait (BBK), TAIB Bank, and ABC (a joint Libyan, Kuwaiti, Bahraini venture), has come at the right time. It will support e-Government efforts in establishing transaction channels and gateways so as to enable online payment of taxes, fees and other government charges. With government departments as main potential clients, BBK has just launched an online payment method based on a solution from ACI Worldwide's Commerce Gateway. The Ministry of Commerce, Ministry of Traffic and Bahrain University are also considering using this gateway.

VIII. IT PLAYERS

A key government policy is to attract major international and regional IT companies to play a bigger role in the Bahrain economy. Government consultants are looking for the best computer systems and e-Solutions in terms of costs and applicability. The general practice for government procurement is to offer tenders for public contracts. All major software and hardware companies

have dealings with the government, and among the companies that are winning contracts related to e-Government and IT training of civil servants are Microsoft, IBM, Cisco and Oracle. Microsoft signed an enterprise agreement with the Central Informatics Organization to deploy its products and technologies. The agreement is intended to reduce the overall cost of technology acquisition, software asset management, deployment and ongoing upgrades for government departments. Last year, the Ministry of Labor and Social Affairs signed an agreement with IBM to develop local IT expertise in Bahrain. The agreement will see IBM training and graduating 2000 people in various IT domains such as e-business over a period of five years. IBM will also train and certify 40 Bahraini instructors as specialist IT trainers.

The IT related companies, as per the commercial register, in Bahrain are approximately 282 companies. 36% deals with Internet, 38% deal with hardware, 9% deal with training, 9% provide consultancy, 8% deal with software.

IX. E-COMMERCE LAW

A draft eCommerce law, which lays down the legal foundation for electronic transactions, has been approved recently by the Government there by providing the legal foundation for e-Commerce. The law follows the advanced law guidelines from North America, European Union, Hong Kong and Singapore and adapts them to the Bahraini environment. It will recognize digital signature and other means of electronic verification and identity authentication. It will also establish the framework for conducting e-Business and other forms of contracting and transacting over the Internet, while preserving contractual rights and obligations. The law, will build confidence and boost e-Commerce in Bahrain, and help speed up the e-Government process.

Bahrain must ensure that its legislative system is on par with global standards in order to be able to attract foreign investors. Three areas of the Bahraini law must be updated to give foreign investors the confidence needed to encourage investment:

CONCLUSION

Kingdom of Bahrain has already got many an ingredients for building an information society in the near future. The Government Data Network and Central Population Register (CPR) will provide the foundation where as the e-Government applications will provide an electronic gateway for the citizen services. The development in the educational and health sectors will accelerate the momentum in terms of human resources. The relatively small geographic size and population will expedite the development processes. The recent political reforms and move towards democracy will provide transparency and more efficiency in the utilization of funds One of the major drawback is that there is no single executive body to coordinate move towards the information society. However the strategies of the ministries and government organizations, Telecommunication Company and all other stakeholders are expected to converge to a single vision of developing an intelligent and digital kingdom through the efforts of Economic Development Board, e-Commerce Committee and the Central Informatics Organisation.

REFERENCES

1. www.bahrain.gov.bh
2. www.bahrainedb.com
3. www.insidepolitics.org
4. www.itu.int
5. www.commerce.gov.bh
6. www.MadarResearch.com
7. www.batelco.com.bh
8. www.inet.com.bh