



**United Nations**  
**Economic and Social Commission for Western Asia (ESCWA)**

**NATIONAL PROFILE FOR  
THE INFORMATION SOCIETY IN KUWAIT**

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## NATIONAL PROFILE FOR THE INFORMATION SOCIETY IN KUWAIT

Kuwait has a gross domestic product (GDP) of \$50 billion USD for 2004, a 19.9% increase from 2003<sup>1</sup>. The country's key industrial sectors like oil and gas, finance and telecommunications have been utilizing advanced ICT systems for planning and management. In addition, these resources allow access to the Internet or private intranets. Kuwait, which is holding approximately 10% of the world's oil reserves, is the third largest in the Gulf Cooperation Council (GCC) countries. However, Kuwait lacks cohesive and detailed national information and communication technology (ICT) strategy. Although a comprehensive national IT plan exists, it is yet general and lacking a timeline. Thus, progress in ICT has been generally slow. However, its electronic government project has clearly defined goals and far-reaching objectives in terms of delivering services online.

**Table 1. ICT use in Kuwait**

Madar ICT Use Rank in Arab world	Population	Internet Users	Telephone mainline	Cellular Subscribers	Madar ICT Use Index (2004)
3	2.75 million	590,000	490,000	2,109,000	1.32

Source: Madar Research Group

Today the country has the third highest ICT Use Index (1.32 in 2004) in the Arab world, trailing United Arab Emirates (UAE) and Bahrain according to the latest Arab ICT Use Index study by Madar Research Group. The index gauges progress on tele-density and the use of PCs and the Internet, thus providing an indicator on the relative technology-adoption rate among Arab countries. Kuwait also has one of the highest Internet penetration rates in the Arab world and is one of the most aggressive adopters of broadband technology.

### 1. Policies and Strategies

#### *National information society policies and strategies*

Whether within the framework of the e-government project, the government is actively engaged in allocating budgets to fund its ICT projects for process of modernization. There are either no plans or no documented plans that expressed in terms of:

- Research and development output;
- High technology exports;
- ICT foreign direct investments (FDIs).

**Table 2. ICT initiatives**

ICT Initiatives	
Clear ICT Strategy	Yes
ICT Implementation Plan	No
Plan of ICT Dedicated Research Facilities	Yes
Operational ICT-Dedicated Research Facilities	Yes
Plan of Technopole Initiative	Yes
Operational Technopole Initiative	No
Planned Technology Incubator	Yes
Existence of Technology Incubator	No

Source: The Global Information Technology Report 2002-2003, The World Economic Forum

<sup>1</sup> Ministry of Planning <http://www.mop.gov.kw/>

Kuwait Information Technology Society (KITS) was instrumental in lobbying for policy changes such as the passing of the state's Copyright Law in 1999.

### *Sectoral plans for building the information society*

#### *Education*

Students constitute around one fifth of the population. In 2002, the Ministry of Education (MoE) initiated the 25-year plan to modernize the education system, in particular, installing electronic education 'Education Net' to link public schools and libraries to a single network, and aim to increase the use of PCs in the classroom in all 620 public schools, 34 % of which were covered by the Ministry of Education and the Kuwait Foundation for the Advancement of Science (KFAS). Short-term goals include covering elementary schools in 2003, and achieve a ratio of one PC for every eight students by 2006-2007.

Distance learning is also a priority with ministry's agenda to plan content and design an Internet based learning program.

#### *Telecommunications*

Development plans are issued by the MOC, while in some cases approval from the parliament is essential for matters pertaining to operating licenses, liberalization policies and privatization issues.

#### *Industry and commerce*

There is no single ICT strategy that governs Kuwait's industry sector, which is largely dominated by oil and oil-related industries using sophisticated IT systems. The government has placed considerable emphasis on moving toward "e-government", but the legal and technical infrastructure for this is developing slowly. A move towards e-commerce is being led by the oil & gas sector, where part of the procurement and deals is already being conducted on global oil marketplaces.

## *2. Legal and regulatory frameworks*

### *National Intellectual Property Rights, Privacy status and status of Freedom of Expression*

Kuwait has signed a number of international trademarks, patent and intellectual property rights protection agreements, including the World Intellectual Property Organization (WIPO) Copyright Treaties (WCT) and the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). The first Kuwaiti Copyright Law was passed in 1999, for protection of audio, video and computer software products.

Kuwait was elevated to the US Trade Representative (USTR) Special 301 Watch List in 2004 due to its failure to address serious and rampant copyright infringement and failure to amend its copyright law<sup>2</sup>. Kuwait's piracy rate is 68 percent for business software and 95% of its entertainment software is pirated<sup>2</sup>. In 2004, Kuwait's piracy rate was still one of the highest in the world.

However, there were positive actions taken in 2004. Kuwait Customs created a special IPR unit in April 2004 and began taking some enforcement actions and a new draft copyright was to be put before the National Assembly in 2005.

### *Telecom regulatory framework in the country*

Kuwait's telecom industry is partly a monopoly, with the Ministry of communications (MOC) acting as a regulator controlling and solely operating Kuwait's fixed telecommunications. .

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<sup>2</sup> International intellectual property alliance 2005 special 301 report.  
<http://www.iipa.com/rbc/2005/2005SPEC301KUWAIT.pdf>

Mobile telecom, however, is a duopoly. Mobile services are offered through private companies that have been granted licenses by the MoC. The MoC has announced plans for legislation for privatization of fixed line operations but strategic execution of the plans is significantly lagging behind schedule.

Kuwait's GSM operators are Mobile Telecommunications Company (MTC) and Wataniya Telecommunications Company. The government maintains 25% equity in MTC, which was recently re-branded MTC-Vodafone. MTC maintained monopoly of the GSM market until 1999. Wataniya was granted a license to operate a second GSM network in the country. The idea of issuing a third GSM license has not materialized.

#### *Regulating the Internet*

The Internet services provider (ISP) sector remains closely monitored and regulated by the MoC. The 4 major ISPs and more than 50 sub-ISPs as well as Internet cafés are required to conform to regulations enforced by penalties. ISPs are required to install surveillance systems and be licensed through Internet Duty Authorized Representatives (DARs).

The government bans pornography and content, which violates of religious and cultural beliefs and practices. Alternative means of access, such as local and international communications equipment is prohibited, and Internet access to clients under the age 18 is prohibited.

The Kuwait National Assembly still needs to enact legislation allowing to Internet transactions in the adoption of e-commerce and e-government services.

#### *Privacy and security laws and regulations for applications*

An electronic signature law, based largely on the United Nations Commission on International Trade Law (UNCITRAL)'s model law on Electronic Commerce, continues to await legislative action.

Personal liberty and consumer protection rights issues have not yet been fully addressed, such as encryption, with actual content available online highly constrained, consumer protection is largely absent from the regulatory environment.

#### *Other ICT-related laws and regulations*

The introduction of economic reforms has been slow. Kuwait joined the WTO in January 1, 1995, but is just now getting around to initiating the full liberalization process including issues such as protectionism, monopolies and restricting trade and foreign investment. Foreign banks, for instance, are not allowed to initiate ventures in Kuwait.

### *3. ICT Infrastructure*

#### *Telephone penetration*

Mobile market is a duopoly with two public companies, MTC-Vodafone and Wataniya Telecom. The cellular penetration rate in Kuwait reached 77% due to huge marketing campaigns during 2004. This translates into 2.11 million subscribers. Cellular revenues were more than double the PSTN revenues in 2003. Fixed lines in use reached 490,000 in 2004, with a penetration rate of 17.82%

Service backbone includes microwave radio relay, coaxial cable, and open-wire and fiber-optic cable, a cellular telephone and pay telephones. The Fiber-Optic Gulf (FOG) offers a 5 gbps capacity and is capable of carrying 180,000 telephone calls or equivalent data circuits between the four countries to other parts of the world simultaneously.

Cellular services in Kuwait are offered through private independent companies that were granted licenses by Kuwait's Ministry of Communication (MoC). MoC is the country's only fixed line carrier, from

where most of GSM operators and Internet service providers (ISPs) purchase bandwidth and network capacities.

*Internet backbone*

Submarine cable, fiber optic and terrestrial satellite networks cover Kuwait. Kuwait is part of the GCC consortium with coaxial cable and microwave radio relay to Saudi Arabia, Bahrain, Qatar, UAE via FOG cable; satellite earth stations - 3 Intelsat, an Inmarsat, and 2 Arabsat to carry both voice and data traffic to the whole Middle East region. Local Internet access is available through dial-up, leased line, ISDN and DSL connections. The network provides gateway access into the Fiber Optic Link around the Globe (FLAG).

*ISPs and ASPs*

Kuwait currently has four licensed Internet Service Providers (ISP) and more than 50 sub-ISPs. Sub-ISPs buy bandwidth from ISPs and in turn lease Internet access to their clients under government Internet regulations and policies.

*Access*

Madar Research estimate of total Internet users in Kuwait is 590,000 in 2004 with 21.45% penetration. Internet access prices remain high with 100,000 Internet subscribers in Kuwait<sup>3</sup>. However, this is relatively low, as multiple users for these subscriber accounts boost the overall Internet usage to over 250,000 individuals.

Consumer-oriented and service industries show a high rate of ICT use include new technologies such as multimedia messaging systems (MMS), short messaging services (SMS) systems and wireless application protocol (WAP) among its citizens.

*PC dissemination*

PC penetration in Kuwait is over 16.36%, the fourth highest in the Arab world according to Madar Research Group, which estimates the country's PC installed base at 450,000 units. The country's import taxes on computers, at 5% unified GCC import tax, are among the lowest in the Arab world. No sales taxes being imposed on computers to boost PC penetration. Kuwait's spending on the computer equipment is about 40% of the country's total IT spending.

Demand for PCs is increasing given the country's move towards the implementation of an e-government project. Internet use has also increased PC purchases for home use.

**Table 3. PC dissemination**

Kuwait <sup>4</sup>	Hosts per 10,000 inhabitants	Users per 10,000 inhabitants	PCs Per 100 inhabitants
2001	15.11	879.13	11.96
2002	13.79	1057.53	12.06
2003	10.9	2282.3	16.1

<sup>3</sup> Kuwait Country Commercial Guide 2005 <http://strategis.ic.gc.ca/epic/internet/inimr-ri.nsf/en/gr126398e.html>

<sup>4</sup> International Telecommunications Union, 2005, <http://www.itu.int/ITU-D/ict/statistics/>

#### 4. ICT Capacity-Building

##### *Awareness and dissemination*

Part of Kuwait's 25-year plan is to modernize its education and exploring remote learning or distance education. Kuwait Information Technology Society (KITS) has made significant contributions to overall ICT awareness by organizing conferences, lectures and seminars.

In May 2002 the Kuwaiti Minister of Education issued a decree to ensure for all teachers hold International Computer Driving License (ICDL) in Kuwait by academic year 2007/2008<sup>5</sup>. Plans are also underway to pilot UNESCO's TEAM educational framework in Kuwait for secondary and higher education and continuous learning, focusing mainly on science and technology.

##### *Computers in schools*

The government has been subsidizing projects with the aim to achieve a ratio of 1 PC per 8 students in public schools and private learning institutions by 2006-2007. Some schools have prerequisite units on Computer Science. The new Omar Center at the Kuwait National English School has a 1:1 student-computer ratio and a fully networked environment. Some private organizations like the Kuwait Foundation for the Advancement of Science<sup>6</sup> (KFAS) provide computers to schools and colleges to support efforts for scientific development.

##### *Vocational training*

*Vocational training in ICT is offered by Kuwait University, Kuwait Institute for Scientific Research's (KISR)<sup>7</sup> and by private entities providing technology assistance to university communities, the government as well as private sectors. These range from basic children's courses to high-level consulting and training for corporate users, and certifications in various Microsoft, Oracle, Cisco, Sun and other technical and end-user courses. Other professional training centers in the Gulf region also allow students to gain remotely access and use the labs equipment located in Dubai.*

Kuwait Small Project Development Company KSPDC is negotiating with the Public Authority for Applied Education and Training (PAAET) for the establishment of two technology incubators designed to help graduates to establish entrepreneurship. A study on this incubator is awaiting approval by government authorities. The two new technology incubators have appeared in the planning stage for quite some time and have not materialized yet.

The Government of Kuwait (GOK) is the main employer of Kuwaitis and employs about 91% percent of Kuwait's labour force. Various ministries and the Civil Service Commission hold various training courses. A large number of private institutes offer training courses of various types, with special emphasis on computer skills, foreign languages, communications skills, and information technologies.

##### *University education*

Kuwait University, meanwhile, was the first learning institution in the Arab world to offer full Internet access to its students in 1992, when the Internet was introduced in Kuwait.

The Kuwait University offers graduate and undergraduate programs in computer science and computer engineering. Enrolment in IT and IT-related courses is on the rise in Kuwait, especially with the establishment of new private institutions such as the Gulf University for Science and Technology (GUST) in 2002 and the scheduled opening of new institutes of higher education in coming years.

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<sup>5</sup> Ministry of Education undersecretary, Jarallah, quoted by the Kuwaiti Arabic daily, Al-Watan in June 4, 2002

<sup>6</sup> Kuwait foundation for the Advancement of Science (KFAS) <http://www.kfas.com>

<sup>7</sup> Kuwait institute for Scientific research <http://www.kisr.edu.kw/>

### *Research, Development and Innovation in ICTs*

The Kuwait Institute of Scientific Research (KISR) and the Kuwait Small Project Development Company (KSPDC) initiated The Kuwait Technology Incubator (KTI) project in 2000 with a view to contributing to some of the objectives of national development plans.

R&D is extremely neglected and scientists have weak connectivity within the region and the Arab world as a whole. A major Kuwaiti scientific research think-tank, KISR, expressly states in its five-year strategic plan (2000-2005) its intent to optimize the utilization of IT, although its major focus remains to be petroleum and oil research, environment and urban development, food and water resources and techno-economics.

### *5. Building the ICT Sector*

#### *ICT firms*

Kuwait is a net importer of technology with most companies being hardware retail shops and service centers. The computer equipment market includes computer systems and peripherals. IT services include IT consulting, IT support, training, system design and integration, equipment services, data communication services.

Kuwait is among the first Middle Eastern countries to have a local software industry with software programs representing 40% of sales. A software development industry was established in Kuwait with the founding of Sakhr Software Company in 1982. However, with the relocation of the company and its development operations to Egypt during the invasion of Kuwait left in Kuwait in terms of local software development is merely in-house development by large enterprises for their own use and several large local ICT firms and agents of global IT multinational (such as Al-Faris Information, Khorafi Business Systems and International Turnkey Systems) which carry out partial development as part of their system integration services.

Kuwait is the third largest information technologies (IT) market in the Gulf Region, after Saudi Arabia and the UAE.

#### *Investment in ICTs*

The new Direct Foreign Capital Investment Law authorizes foreign-majority ownership and 100% foreign ownership in certain industries including IT and software development companies.

Kuwait has lagged behind other GCC countries in the privatization process of the fixed telecommunications sector. All of Kuwait's neighbors have already partially-privatized their PSTN operators. However, Kuwait's is considered to be one the most advanced telecommunications markets in the region.

Between 1995 and 1998, the government successfully divested over 50% of its equity holdings to private firms. An example of this strategy can be seen in the sale of about 24% of the Mobile Telecommunications Company (MTC) shares to fulfill the government's intention to reduce its equity from 49% to 25%.

Market acceptance of American IT and e-commerce products and services in Kuwait is very strong. European and Asian IT competitors are also active, making Kuwait a very competitive and price sensitive market.

#### *Government facilitation*

In 2001, the Kuwaiti government announced a five-year privatization program outlining a wide range of activities including privatization of telecommunication services. Privatization of existing government entities has not yet occurred according to the Chapter 7 of Kuwait Country Commercial Guide FY2003.

### *Export of ICT equipment/software*

There are no exports of ICT products from Kuwait, though Sakhr Software's Egyptian arm exports packaged software and solutions.

## *6. Applications in Government Establishments*

### *Computerization of public administration*

The Ministry of Interior invested \$45 million in IT modernization program in 2001. An Internet-accessible database at the Civil Service Commission provides up-to-date employee records. The project involves upgrading the ministry's backbone network, sharing and centralizing the ministry's databases and applications, and integrating a common data model. Other Ministries also plan to use an electronic card payment system to facilitate electronic payment.

### *Digitization of information*

The country's key industrial sectors like oil and gas, finance and telecommunications has been utilizing advanced ICT systems including enterprise resource planning (ERP), relational database management systems (RDBMS) and customer relationship management (CRM) systems that clients, partners and employees could access through the public Internet or through private intranets. Ministries have also been computerizing the country's governmental departments and branches. The digitization of public records and information has been increasing through the Interior Ministry's centralized applications and interconnected databases

### *e-government plans*

The vision for an e-government in Kuwait entails interconnecting the various government offices in a singlewide area network (WAN), at the same time making sure that the internal systems (central databases, payroll and HR applications, etc) of the various government agencies are accessible via the Internet.

Kuwait is about half way through its e-government project, which is scheduled to yield online version of all basic public services in 2007. Microsoft is the main consultant in the project, which is estimated by Madar Research to cost around \$450 million.

Kuwait's existing national identification system will eventually make the delivery of e-government services easier than those states in the region that have not yet adopted such system, such as, the use of national identification card number of each citizen in issuing e-mail addresses for the entire population that will enable residents to use government e-services and authenticate their correspondence with public departments, banks and other organizations.

Execution of the e-government plan has been rather slow. Of the 36 government departments in Kuwait that are known to have an active website, 75% have no facility for feedback except for occasional e-mail contacts, according to a Madar Research study conducted in mid 2004.

### *Computerization of customs processing*

The Interior Ministry's Information and Computer Systems Centre (ICSC) has designed and developed 13 applications relating to key areas such as immigration, residency and visa processing, driving license application and renewal, vehicle registration, border control and criminal records management, and an automated fingerprint identification system.

Kuwait has adopted E-Mirsal, which is a complete shipping and customs solution developed by Dubai Customs that allows agents, shippers, transport companies and other organisations in the cargo business to submit and process their customs clearing documents and payments over secure Internet connection 24 hours a day. The solution is likely to be adopted by all GCC states after its deployment in Kuwait and Oman. Kuwait's General Warehouses Co. (KGWC), which manages Kuwait's Free Zone, signed

an agreement to deploy E-Mirsal in Kuwait City. KGWC has been Kuwait's Customs' partner in using IT systems to serve Kuwaiti cargo and shipping companies that are trading with other countries. The system has been customized to meet the requirements set by the Kuwaiti government to boost its international trade exchange.

## *7. Applications in Education*

### *e-learning*

The Kuwait University has five main campuses with the installation of a converged network that provide distance learning. The digital library provides students with a video on-demand facility where all the live lectures are recorded and backed up to an online library, including a portal to register for academic courses and receive information through the Internet. In addition, Kuwait University has integrated e-business solutions for payroll, supplier payments and human resources solutions.

Another example of distance learning is the Centre For Community Service & Continuing Education (CCSCE)<sup>8</sup>.

In addition to a multiple Gigabit Ethernet network, wireless LANs are now located in various meeting areas and restaurants within the university. IP telephony is also available within the campuses, as the network platform – supports all forms of data transmission: voice, video, text.

### *e-school projects*

Meanwhile, 24 public intermediate and secondary schools in Kuwait will serve as pilot sites for an e-learning module. The Ministry of Education hopes integrate projects for intermediate and secondary schools by school year 2006-2007.

### *Virtual universities*

There are no known virtual universities. However, virtual classroom have been initiated since 2004.

## *8. Applications in Commerce And Business*

### *Extent and maturity of e-commerce and e-business applications*

A growing number of Kuwaiti businesses are expressing interest in e-commerce and mobile commerce (via cellular telephone and the wireless application protocol or WAP) for business-to-business (B2B) and business-to-consumer (B2C) applications.

Business-to-business (B2B) and e-commerce is also picking up in Kuwait, especially with the oil industry. Private exchanges, primarily those owned by multinationals to transact with their local partners and agents, are now in place. The Kuwaiti market for e-commerce-related hardware, software and services for 2002 is expected to grow at 20% per year. There is a large increase in Internet user numbers as well as the high penetration of credit and debit payment cards in Kuwait. The total number of payment cards (debit and credit) in circulation in Kuwait is estimated at some 1.45 million by end 2003 with a penetration rate of 59 percent is the highest in the Arab world according to Madar Research Group. The prevalence of advanced online banking solutions and practices in Kuwait further contribute to the spread and development of e-commerce in the country.

The country's oil and gas sector is expected to emerge as the major B2B player over the coming years. Kuwait Oil Company (KOC), for example, implemented an online solution to automate all its internal tendering processes and eventually expand its processes to include a virtual marketplace for its suppliers and contractors. Also in early 2003 KOC entered into a five-year agreement to build an enterprise-wide

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<sup>8</sup> Center for Community Service & Continuing Education. <http://kuc02.kuniv.edu.kw/~csce/dist1.html>

integrated information solution. Under the agreement, KOC staff will have full access to GeoQuest exploration and production (E&P) software covering the entire oil and gas lifecycle.

One of the B2C sites, OurGulf.com utilizes an electronic customer relationship management (e-CRM) system, with high-degree of personalized functions with data transmission, security, privacy and business processes certified by bodies such as Checkpoint, Verisign, Truste and ISO 9001.

Owing to a high rate of mobile phone penetration telecommunication companies and banks in Kuwait are now using short messaging services (SMS) – and wireless application protocol (WAP)-based applications to present bills, broadcast promotions, and involve also MTC-Vodafone to upgrade its SMS infrastructure and launching multimedia messaging service (MMS).

Madar Research estimates the total value of e-commerce market in Kuwait at \$5355 million in 2003, with B2B having a loin's share of \$310 million and B2C \$45 million.

#### *Availability and quality of e-banking*

Several local banks offer Internet banking services with Kuwait being the highest e-banking adoption rate among all Arab states. Four of Kuwait's seven commercial banks now offer retail-banking services through the Internet, while the other three banks are planning Internet banking. All the banks offer phone and ATM banking services. The National Bank of Kuwait (NBK), Gulf Bank and Burgan Bank are the three leading institutions in Internet banking.

According to Madar Research – of the total 500,000 bank accounts with various banks, Internet banking accounts form about 100,000 (20% of the total accounts). One of highest percentage Internet bank accounts among the GCC states.

#### *Maturity of regional ATM and banking networks*

Online aspects of retail banking services in Kuwait vary. NBK and Burgan Bank allow account balance inquiry; inter-account funds transfers as well as funds transfers. Users can also pay their bills to MTC, Wataniya or the MoCusing NBK's online banking services. Customers of the Bank of Kuwait and Middle East can issue instructions using SMS and WAP for BKME to execute utility bills payment, transfer funds or send a statement of account to the concerned customer.

Madar Research estimates Kuwait's ATM network to comprise about 300 ATMs by end 2003, with Kuwait Finance House having the largest network of 95 ATMs followed by National Bank of Kuwait with 82 machines and Gulf Bank with 65 ATMs. Burgan Bank, which has a network of 25 ATMs, also operates mobile ATMs in places where there are no ATMs like exhibitions, etc.

#### *Maturity of Bank to Bank financial transfer system*

NBK, Kuwait's largest bank and by far the most aggressive in terms of online banking presence in the state, offers most of its services online. Its Watani Online Corporate (WOLC) services allow enquiries to account information, transactions such as transfers, draft and check book request, online brokerage and mobile banking.

The Bean Bank provides Internet banking under BeeBank.com and offer a foreign exchange and equities trading service BeeTrader. The banking sector in Kuwait is on par with its counterparts in the developed world in terms of ICT system use, whether for bank-to-bank transfer, internal operations or customer services.

### *9. Applications In Healthcare*

Current public expenditure on health is 3.5% of GDP 2003.

### *Databases for national healthcare*

The state-wide electronic filing system adopted by Kuwait's Ministry of Health is a forerunner for the state's clinics and hospitals to eventually link up in a single network and a central database for more efficient patient record management system, according to the ministry.

The Ministry of Health has in the last couple of years started implementing a number of ICT projects that aim to fully automate national healthcare delivery and management through a centralized database and an Internet-based network. The projects, which are at different levels of completion, come under the ministries overall plan to institute e-government in the healthcare domain. The major projects, which will run on a UNIX/LINUX operating systems, in addition to Windows NT and Oracle relational database system, are the setting up of Electronic Medical Records, a Primary Health Care System, Hospital Management Information System (for both General and Specialized Hospitals), Administrative and Financial Affairs system, Decision Support Systems, Health Registration System, Health Insurance System, Birth & Death Information System, and Warehousing and Portal Systems.

The Primary Health Care System (PHCS), which was developed in-house by the ministry's Department of Information, is installed in all primary healthcare centers in Kuwait, and all users such as doctors, pharmacists, and nurses have been trained on the system. The new PHCS system is helping the ministry to create and maintain a main database. The system is reported to be saving processing time, helping reduce drug waste and allowing physicians to spend more time with patients. The system is also leading to the creation of a single electronic healthcare file, which is shared, between all MoH hospitals),

A Secondary HealthCare System for Regional Hospitals, which is undergoing development, involves the creation of a Hospital Management Information System. Each regional hospital will have its own database along with those of all health centers in the same region. Also, the system will make use of the communications links that connect the health centers with their regional general hospital. These links are twofold: one is fiber optics, and the other is wireless. These high-speed broad bandwidths will facilitate transmission of data, and eventually the databases of all these respective hospitals to the Ministry of Health. The system will have a URL for Internet users for enquiries and researches. The project will eventually lead to a master database of all hospitals patients that are kept and maintained on the UNIX servers. (Reference: A conference paper (titled E-Government of the Ministry of Health) presented by Salah Baqer, Director of Information at Ministry of Public Health in Kuwait in 2003)

### *Telemedicine and medical use of teleconferencing*

The availability of broadband Internet facilitates the use of telemedicine with the availability of access to remote expert medical advice and practice provided by the more advanced medical institutions to reduce treatment abroad.

In 2000, Kuwait's Al-Bader Group became the premier provider of Apollo Telemedicine to implement Apollo's eHealthStat Tele-diagnostic network in the Middle East and the Indian subcontinent. With Apollo's telemedicine technologies, Al-Bader-supports physicians and institutions online access, real-time and secure specialty consultations from the most prestigious hospitals in the United States and Europe. There are no indications, however, whether the system has been implemented yet.

Kuwait is part of the Arab TeleMedicine Network (ATMN) constructed to facilitate the exchange of medical data among the hospitals and medical centres in the Arab region and international centres.

### *Maturity and implementation of Health Care Information Technology Systems*

Implementation of health system is underway with its deployment in general hospitals and in Kuwait's specialized hospitals. The project aims to link Kuwait's health organizations to a central computer network to facilitate efficient diagnostic, medical and administrative services for each patient and to streamline government health services expenditure in the long run. Some healthcare IT systems have been implemented, such as the Primary Healthcare System, and are already in use, while others are undergoing

implementation. Once all health systems are deployed within the next two to three years as part of the e-government project, Kuwait is expected to have a fully integrated Internet-based national healthcare system, comparable with the developed world.

#### 10. Digital Arabic Content

##### *Arabic vs. English content on the Web for national use*

A survey of websites carrying the country code Top Level Domain (ccTLD) “dot-kw”, reveals that 66% of available content are in English whereas 33.5% are in Arabic<sup>9</sup> (in 2003). Significantly less Arabic content than those registered under the dot-kw domain. Kuwait's presence on the Net is established by 1,400 websites – whether carrying the 'kw' TLD or registered by Kuwaitis<sup>10</sup>. Madar Research estimates this number to stand between 1,000 and 1,200 websites during mid 2003.

##### *Local creation of software products in Arabic*

The constraints in Arabic content led a Kuwaiti-owned Egyptian company Sakhr to design and develop a range of software solutions that integrates natural language processing (NLP) tools. Sakhr is now the biggest and most successful Arabic software company to promote the arabization of digital contents. Its products also include end-to-end document and management and storing and managing Arabic content.

A good number of software companies are now keen to have an Arabic version or interface released to further increase Arabic content and therefore motivate more Arabic language users to go online, developing standards in various areas of arabization is required.

Government web sites do not all offer Arabic content, which is a must for an Arab e-government Web site, and vis versa for non-Arabic speaking researchers finding difficulty to access Arabic only information on the government agencies' basic services websites.

Furthermore, only 25% of the Web sites have a search engine. None of the government Websites to date offers transactional functions such as online payment of traffic fines or utility bills. Two websites, [www.e.gov.kw](http://www.e.gov.kw) and [www.kuwait.kw](http://www.kuwait.kw) service as e-government services as a government portal. Both Web sites are in Arabic and English.

##### *Obstacles for its development and ways for removing them*

The Arabic language differs tremendously in terms of its characters, morphology and diacritization from other languages with most striking difference is words usually presented without vowels. Non-diacritized Arabic would reduce these words to the individual reader to decipher depending on the context, which poses problems of machine and PC device representation. Probably one of the main obstacles for the development of Arabic software products in Kuwait is the limitation of the local market, which is already catered for by Kuwait's Sakhr Software's Egyptian base. The market for Arabic Internet content is growing, especially with the e-government transformation. As the case with all GCC states, ICT training of young nationals, along with a government policy that encourages ICT-related private ventures, can encourage widespread development of Arabic software and content.

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<sup>9</sup> Madar Research Group

<sup>10</sup> Info Zone Co. [www.infozone.com.kw](http://www.infozone.com.kw)