QATAR

A small, wealthy, peninsular country (Figure 45), Qatar is in the enviable position of being able to invest heavily in rapid infrastructure development. Investment has first of all been targeted at the petroleum sector, and secondly at development of other forms of export earnings, such as shipping. The state's small population (Table 80) masks the fact that only 150,000 people are considered "Qataris," and thus beneficiaries of the government's largess; the remainder are long-term foreign residents and *gastarbeiter*. From the types and generations of technology present in the country, Qatar is very advanced. However, these world-class resources are not always employed to their full potentials and there remain several unresolved development policy issues. Although Internet services are presently available, questions regarding content and employment of the Internet have not been completely resolved. Additionally, with a high-quality infrastructure in place, there is no clear plan for a future national information infrastructure (NII). A committee, which will be chaired by the Supreme Planning Council, will be formed in the near future to examine this issue. The NII planning committee will comprise representatives from all the various constituencies for information technology, principally government ministries and academia.

Figure 45. Map of the State of Qatar

Table 80.
Qatar in Statistics

Metric	Value[326]	Remarks
Population	0.55	millions, 1995
Population density	48	per km^2, 1995
GDP	7.4	US$billions, 1994
GDP per capita	13,730	US$, 1994
Telephones	122.7	thousands, 1995
Teledensity	22.27	per 100 inhabitants, 1995
Teledensity in largest city	21.35	per 100 inhabitants, 1995
Cellular subscribers	18.5	thousands, 1995
Cellular density	3.35	per 100 inhabitants, 1995
PCs	30	thousands, 1995
PC density	5.44	per 100 inhabitants, 1995
Television sets (receivers)	252	thousands, 1995
Television density	45.7	per 100 inhabitants, 1995
Literacy rate	79.4[327]	per 100 inhabitants older than 15 years, 1995
Infant mortality	19.6[328]	per 1000 inhabitants, 1996 estimate

The Qatar Public Telecommunications Corporation (Q-Tel) is the government-owned monopoly provider of telecommunications services and owns all of the IT infrastructure in Qatar. The Qatari government plans to open the

[326] Source: *World Telecommunication Development Report*, 3rd ed., 1996/97 (Geneva: International Telecommunications Union, March 1997), unless otherwise noted.

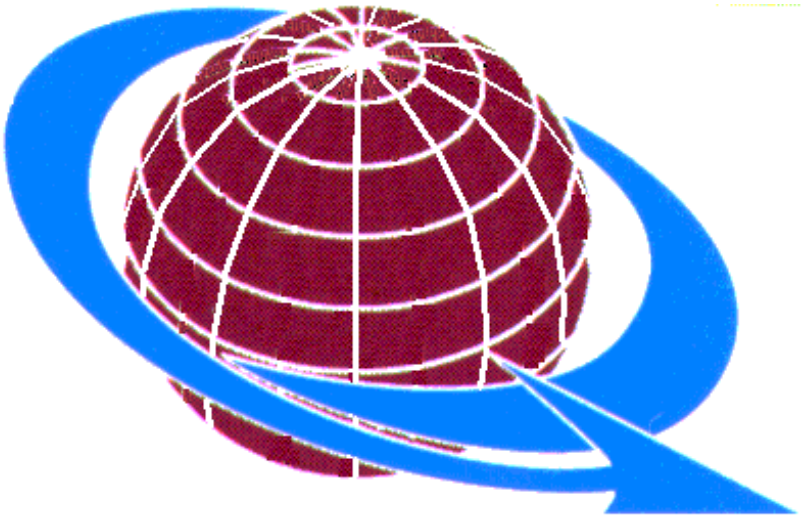
[327] *The World Factbook 1996*, <http://www.odci.gov/cia/publications/nsolo/factbook/qa.htm> (9 February 1998).

[328] *ibid.*

telecommunications sector to competition in the future, but no time frame for the transition has been established. In the near term, efforts will be concentrated on establishing the requisite regulatory bodies and regulations.

Networks in Qatar

Q-Tel issued a call for tenders for the turn-key installation of an ISP site and a connection to the Internet in November 1995, with a target date for offering service of May 1996.[329] The contract was subsequently awarded to Sprint, which installed and commissioned the equipment and provided a 256 Kbps satellite link to an Internet port on Sprint's backbone in the United States. Sprint also provided a subscriber billing system for the Internet service. Public Internet access has been available since June 1996. Q-Tel is the exclusive ISP (www.qatar.net.qa), and is also the domain manager for the *.qa* national TLD. A commercial ISP, Qatar Net, has registered a domain, but does not have a host/node and is not licensed to operate in Qatar.



Prior to opening the Internet service to the public, Q-Tel estimated that the total subscribership would be a few hundred people. The popularity of the service came as quite a surprise. There were 850 Internet subscribers by the Q-Tel service's second month of operation,[330] growing to 3,200 dial-up subscribers after nine months. Additionally, there were an estimated 3,000 users on the leased lines.[331] Five of the leased lines connected government ministries, including the Ministry of Foreign Affairs. About half of the service's users were government employees; the remainder of the users were evenly split between commercial and personal use. The usage rate was 40-45 minutes per user per day, with the peak periods being 9:00 a.m. through noon and 7:00-10:00 p.m. Most international Internet traffic still is with the United States, although commercial traffic with the UAE is increasing due to the strong business ties between the two countries. Due to the high level of use, Q-Tel replaced its initial 256 Kbps satellite link with an E-1 (2.088 Mbps) satellite link. Q-Tel reported a total of 8,265 subscribers as of July 1997, which jumped to 17,297 by January 1998.[332] As of May 1997, Q-Tel was planning on adding a second E-1 satellite link, and was investigating the possibility of creating a regional subnetwork with Bahrain, Kuwait, and Oman via the Fiber Optic Gulf (FOG) submarine fiber cable system that connects these four countries.

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329 "Qatar: In Brief…," *Middle East Economic Digest* 39 (8 December 1995), p. 25.

330 *State of Qatar: Computer and Internet Provider* (20 March 1997), <http://www.xrules.com/qatar/c_netqat.htm> (15 April 1997).

331 Nassser M. Marafih, personal communication (17 May 1997). Dr. Marafih is the Strategic Planning and Development Manager for Q-Tel and the Administrative Contact for the *.qa* national TLD.

332 <www.nua.ie/surveys…>, *op. cit.*

In May 1997, Q-Tel had seven UltraSPARC servers, running the Solaris operating system, on-line, of which two were domain name servers (DNS), one primary and one back-up, one a Web server, one the e-mail server, and one was used for network management. The Q-Tel network used five Cisco 5100 and 7500 series access servers and routers, as well as a firewall to protect its network from intrusion and to prevent the transfer of prohibited material (e.g., pornography) over its network. The firewall functions were implemented in the routers. During the same time frame, 169 hosts responded to a ping of the IP numbers assigned to the Qatar TLD (194.133.33.0-194.133.34.0), indicating the presence of a large number of computers on the seven networks connected to Q-Tel via leased lines.

Internet service in Qatar is relatively inexpensive. A subscription costs QR 60 (US$16.50) per month, and there is a connection fee of QR 6 (US$1.65) per hour (US$0.03/minute). This is inexpensive enough to allow most Qataris, certainly all Qataris who own computers, to use the Internet regularly. A 64 Kbps leased line costs QR 10,000 (US$2,750) per month, and there is no restriction on the number of networks, computers, or users that can be connected on a single line. ISDN service was recently activated on the telephone network, and Q-Tel intends to offer ISDN access to the Internet in the near future. Q-Tel had examined the pricing issue to determine whether it was better to price the services so as to recover its investment in a reasonable time period, which would have resulted in a relatively high price, or whether to offer the service at a low price in order to encourage wide-spread use. The government's commitment to universal service was the key point in deciding to offer Internet services at a low price. This, coupled with a high interest in the service, resulted in the high growth rate noted above.[333]

Local companies are currently providing Internet-related services such as the design of web sites. There are three software development companies in Qatar; all are working on developing Arabic software and the development of Arabic-language web sites and Internet tools, among other projects.

Although education was said to be a major concern of the Amir,[334] the University of Qatar (www.qu.edu.qa) is not yet on-line. It has several small LANs serving individual departments, but computers are not ubiquitous on campus and plans for IT development at the university are vague, as the various department heads do not see any urgency in connecting the University to the Internet. There are no plans for giving students free or subsidized Internet accounts.[335] The university does officially manage the *edu.qa* domain, although there are no hosts registered in that domain. Computer literacy among the students and the general population is said to be relatively good, and there is a general awareness of the availability of such technologies as the Internet, but many people do not have a good idea of just what the Internet comprises and does.[336]

Internet Dimensions Table 81 summarizes the Internet dimensions in Qatar, which are depicted in Figure 46.

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[333] Marafih, *op. cit.*

[334] Shaykh Ahmed M. Jabor al-Thani, personal communication (19 May 1997). Shaykh al-Thani, a member of the Qatari Royal Family, is Assistant Secretary General of the Supreme Council for Planning.

[335] Dr. Ismail A. Tag, personal communication (17 May 1997). Dr. Tag is a Professor and the Dean of the College of Engineering at Qatar University.

[336] Al-Thani, *op. cit.*

Pervasiveness Internet use is common (Level 3) in Qatar. More than three of every ten residents of Qatar ("the population") is a regular user of the Internet. Among Qatari nationals, use is even more pervasive: more than ten percent have Internet accounts. The diffusion of the Internet has been affected by the "Qatarization" program, in which Qatari nationals have been displacing foreigners in government service, since more than half of the country's Internet users are government employees.

Dimension	Level	Explanation
Pervasiveness	(3) *Common*	Three percent of all the residents of Qatar have Internet accounts. Among Qatari nationals, Internet use is pervasive: more than one in ten is an Internet user.
Geographic Dispersion	(1) *Single Location*	There is a single ISP node in the capital, and international satellite links serving the Internet terminate at one earth station.
Sectoral Absorption	(1) *Rare*	The government and commercial sectors are the principal users of the Internet. Neither the health nor the academic sector had connected, as of mid-1997.
Connectivity Infrastructure	(1)	There is neither an IP backbone nor an Internet exchange, and only a single international link.
Organizational Infrastructure	(1) *Single*	Q-Tel, the state-owned telecommunications company, is the sole ISP. There is no competition.
Sophistication of Use	(2) *Conventional*	The Internet is used principally for e-mail, although interest in research via the Internet is growing. A single government organization has significantly altered the way development planning is conducted through development of an IP-based intranet hosting a GIS associated with government databases.

Table 81. Internet Dimensions for Qatar

Geographic Dispersion The Internet has not been geographically dispersed in Qatar, although an IP backbone may be established in the near term. The majority of the country's population lives in Doha, the capital. The other small concentrations of population are at oil field sites. All ISP equipment is in a single location in Doha, as is the single earth station for the international satellite link to the Internet. Since the national telephone network is entirely digital, an IP backbone might be established to facilitate networking between petroleum sector entities; such a network or networks would likely be based on IP, but might not be connected to the Internet.

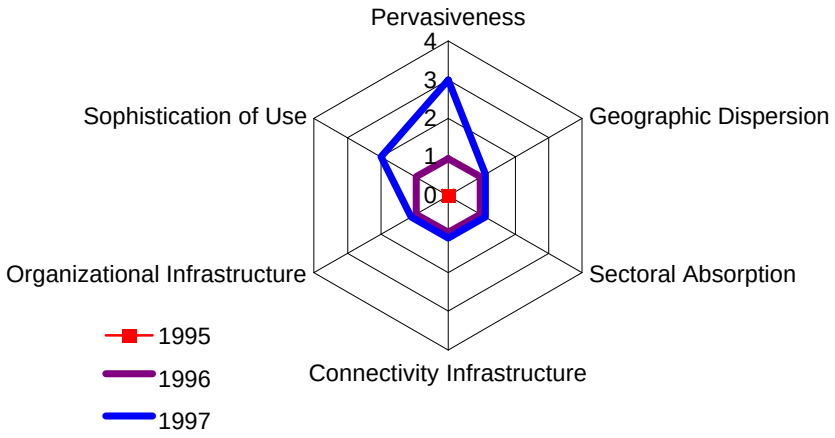

Figure 46. Internet Dimensions for Qatar

Sectoral Absorption The Internet is in common use in the government and commercial sectors, but has not been established at all in either the academic or health sectors. The Sectoral Absorption rating for Qatar is Level 1 (Rare), despite the pervasiveness of Internet use in government, commerce, and the society as a whole.

Connectivity Infrastructure Although there are neither an IP backbone nor an Internet exchange in Qatar, it is rated Level 2 for Connectivity Infrastructure because of its high-speed international link to the Internet and the offering of dial-up and 64 Kbps leased-line service.

Organizational Infrastructure There is but a single ISP in Qatar, the government-owned monopoly telecommunications company. While the government realizes that privatization is required in the long term, there are no definite plans or time frame for privatizing Q-Tel or introducing competition in telecommunications. Qatar is rated Level 1 (Single).

Sophistication of Use Use of the Internet in Qatar is conventional (Level 2). Although government users represent approximately half of all Internet users in Qatar, the Internet is not an integral part of government operations. The principal application used both by government and other subscribers is e-mail, although there is growing interest in conducting research via the worldwide web.

The Centre for Geographic Information Systems (GIS), however, is making an impact on the way civil engineering and related development planning is being conducted in Qatar. The center has developed a GIS that is linked by an intranet (IP-based wide-area network) to 16 relevant government ministries and agencies. The fiber optic network provides all subscribers with access to highly accurate maps of Qatar, the databases of the various government organizations involved in infrastructure development, operation, and maintenance, and the capability to overlay database information on the maps. The capital city has been mapped in its entirety, and the electrical, telephone, and plumbing/sewage networks have been bench-marked and correlated to the new maps. Work is now commencing on an oil field development that is currently being expanded. The goal is to map the entire country; 160 GB of geophysical data have been collected thus far. Although

the GIS is not accessible from the Internet, the public can access certain information, such as residential plats and pipe/wire runs, via kiosks at the municipal water and sewage agency and the office that issues building permits.[337]

Determinants

Estimates of the number of personal computers in the country range from 10,000[338] to 30,000[339] for a population of about 550,000, of which only about 150,000 are Qatari nationals. This represents a penetration of between 1.82 and 5.45 percent, as compared with an Internet penetration of 3.15 percent, a cellular telephone services penetration of 3.35 percent, and an overall teledensity of 22.3 percent. The Supreme Council for Planning recently commissioned a survey from the Central Statistical Organization in an effort to gain a better understanding of the proliferation of computing technology in Qatar.

The issue of establishing a connection to the Internet was more one of how rather than whether or why. Q-Tel makes a conscious effort to offer the most modern services available. Thus, when the Internet became both popular, around 1995, and available in neighboring countries, it was felt that this was a service that Qatar should have as well. The nature of the service was conditioned by the government's commitment to universal access to services, thus the relatively low price, and the requirement to ameliorate security and social concerns. Some of the major issues are listed in Table 82.

The Supreme Council for Planning was not involved in the decision to offer Internet services in Qatar, and in fact is seldom involved in telecommunications sector issues. Q-Tel is expected to make new technologies available in Qatar as they become available, and Internet service was not viewed with any particular concern. Qatari businesses may be one of the main benefactors of the Internet, but were not the driving force in bringing the service to Qatar. In the case of Internet service, as with other telecommunications services, Q-Tel made a proposal that was reviewed and approved by the company's Board of Directors. The decision to offer the service was included in routine plans provided to the Supreme Council for Planning for its use in preparing national projections.

There are relatively few political concerns in Qatar, whether related to the Internet and other IT or more generally. There are no opposition groups within the country, and the number of Qatari expatriates abroad is negligible. The only perturbation was the 1995 *coup d'etat*, wherein the current Amir, Shaykh Hamad bin Khalifa al-Thani, deposed his father. The principal points of contention were said to be differing views on the pace of and priorities for development. After several months of negotiations, the situation stabilized, and did not create any lasting opposition to the current Amir.

The issue of the availability of information on the Internet that is contrary to local values and/or laws was a major factor in the process of deciding how to implement Internet services in Qatar. Filtering out undesirable material has proven to be more difficult than expected. The main concern

[337] Hussain Ali al-Sayegh, personal communication (18 May 1997). Dr. al-Sayegh is Secretary General of the GIS Steering Committee and Head of Administration Services at the Centre for Geographic Information Systems.
[338] Al-Thani, *ibid.*
[339] Al-Maskari, *op. cit.*, p. 16.

regards the availability of pornography, but the potential for the propagation of other un-Islamic values (for instance, proselytizing by religious groups) is also a concern.

Table 82. Determinant Impact

Determinant Quality	Affected Dimension
State policy on monopolization and impending privatization	Pervasiveness—Limited by pricing structure, due at least in part to lack of competition Sectoral Dispersion—Limited by pricing structure, especially lack of support for academic sector Organizational Infrastructure—May improve if competition is allowed after privatization of Q-Tel
Engaged foreign relations	Connectivity Infrastructure—International links are likely to increase in number and bandwidth due to government's desire for regional participation and recognition.
Open information policy	Pervasiveness, Sectoral Dispersion—Benign government information policy may increase Internet use
Lack of security concerns	Pervasiveness, Sectoral Dispersion—Lack of threat perception on the part of the government is likely to obviate any attempts to control Internet access or use.
Lack of geographic scope	Geographic Dispersion—There is little reason to extend much Internet service beyond the capital city except for links to oil fields.
Modern telecommunications infrastructure	Geographic Dispersion—The modern telecommunications infrastructure will support Internet use throughout the country.
Powerful stakeholder	Sectoral Dispersion—The Emir personally supports the development of a robust IT infrastructure. This is likely to increase Internet use by the public sector and may improve the situation of the health and academic sectors.
Lack of technical sophistication	Sophistication of Use—Although the country can afford to purchase modern technology, the ability to employ this technology efficiently and effectively has lagged behind.

Before the service went public, Q-Tel experimented with using a proxy server to preclude access to undesirable material. However, their configuration resulted in a significant degradation of service (latency in retrieving web pages), so this method was discarded. Instead, they are using their routers as firewalls to block access to undesirable sites and protect their network against hackers.

Currently, there are no restrictions on the use of cryptography, although any hardware, including cryptographic equipment, to be connected to a Q-Tel network must receive type certification. The Qatari government is considering establishing licensing procedures for cryptographic software in the future. There is little perceived danger from the possibility of the use of encryption by criminals in Qatar.

Problems and Prospects

The Supreme Council for Planning, which conducts all strategic planning and prepares the Five Year Plans, is concerned about the current lack of availability of data for planning and forecasting, but has not yet formulated a strategy for integrating Internet services into their IT support. Emphasis at present is in getting records at various domestic agencies computerized and made available via a national network, which may in fact be based on Internet technology, similar to the GIS network.

The Council has done some very preliminary thinking about establishing a national information highway, but no definite plans have been made nor is there any time-table for even planning, much less establishing such a network. A committee was established earlier this year to give the matter more thought. The Assistant Secretary General of the Council noted that the national information highway would probably be used first to link government ministries and offices, and then gradually opened up to other uses, including commercial and public access, at some later time.[340]

As in many of the other countries in the region, particularly Bahrain and Oman, such restrictions as may exist on Internet use and access to certain types of information do not appear to have retarded the Internet's development within Qatar. There remains significant room for growth, especially as the university comes on-line, the petroleum sector makes more use of the Internet, and the outline of a national information infrastructure takes shape.

[340] Al-Thani, *op.cit*.