SAUDI ARABIA

Saudi Arabia dominates the Persian Gulf region, as the largest country, the next-door neighbor of seven of the eight other countries in the region (Figure 47), and the focus of the Islamic faith. Despite its large size, vast sections of the country, such as the *al-Rub' al-Khali* ("Empty Quarter"), are uninhabitable, resulting in population concentrations in the littoral regions, mountains, and oases. The settlements, many grown into cities, that dot the country are a result of the nation's founder's campaign to settle the bedouin in his quest to conquer the Arabian Peninsula during the first quarter of this century.[341] The region was a center of anti-Ottoman intrigue during World War I, when the British were still ascendant on the eastern and southern coasts, the eventual founder of Saudi Arabia, Abd al-Aziz ibn abd al-Rahman al-Sa'ud (a.k.a. Ibn Sa'ud), held the center and north, while the Hashemite Sherif of Mekka, the great-grandfather of the present King of Jordan, was the main actor on the west coast, which remained largely under the control of various local shaykhs.[342] Although the Arabs never achieved their unified kingdom that was the goal of their cooperation with the British, Ibn Sa'ud emerged as undisputed ruler in the east, and Sherif Hussein ruled in the West. When Hussein declared himself Caliph (successor to the Prophet Mohammed as the spiritual leader of Islam) following the deposition of the Ottoman Sultan, Ibn Sa'ud launched a successful challenge, achieving control of the western kingdom in 1926 and unifying the two kingdoms into today's Saudi Arabia in 1932.

Saudi Arabia
International boundary
Emirate boundary
National capital
Railroad
Road
There are no emirate capitals. Administration is from Riyadh.
200 Kilometers
200 Miles
SYRIA
LEBANON
ISRAEL
JORDAN
IRAQ
IRAN
KUWAIT
QATAR
BAHRAIN
UNITED ARAB EMIRATES
OMAN
YEMEN
SAUDI ARABIA
EGYPT
SUDAN
ETHIOPIA
DJIBOUTI
SOMALIA
Red Sea
Persian Gulf
Gulf of Oman
Arabian Sea
Gulf of Aden
Socotra (YEMEN)
Beirut
Damascus
Baghdad
Amman
Kuwait
Manama
Doha
Abu Dhabi
Muscat
Riyadh
Sanaa
Djibouti
Aden
Mecca
Medina
Jiddah
Port Sudan
Khamis Mushayt
Najrān
Ash Sharqiyah (EASTERN PROVINCE)
Ar Riyāḍ
Al Madīnah
Al Qaṣīm
Ḥā'il
Tabūk
Al Jawf
Ash Shamaliyah
Al Ḥudūd
Al Ḥijaz
Al Ḥasa
Asīr
Jāzān
Najrān
Al Ḥudaydah
Mocha
Ash Shaqirah
Al Mukallā
Seyyūn
Sayḥūt
Ṣalālah
Berbera
Desē
Gondar
Asmara
Massawa
Kassala
Al Ḥillah
Karbala
An Najaf
Al 'Amārah
Al Baṣrah
Khorramabad
Esfahān
Shīrāz
Bandar-e Khomeyni
Bandar-e Bushehr
Bandar-e 'Abbās
Ra's al Khaymah
Al Fujayrah
Dubayy
Abū Ẓaby
Al Buraymi
Ṣūr
Ra's al Khafji
Al Ḥufūf
Ad Dammām
Al Jubayl
Ar Rumaylah
Ar Ruwaydah
Ad Dawādimī
Ar Rawḍah
Al Ḥawṭah
Ar Ḥarīq
Ḥaraḍ
As Salwā
Al Ḥawīyah
Al Ḥarīqah
Ar Rass
Al Qaṣīm
Buraydah
Unayzah
Ar Rass
Al Ḥā'ir
Al Ḥawṭah
Al Ḥarīq

result has been a sharp division in society between the elite, the middle class, and the rest of the population. As oil income declined, and under the burden of Desert Shield/Storm expenses, spending on social programs was cut first, resulting in increasing discontent among the lower classes. Meanwhile, the continued support of the royal family at the Treasury's expense exacerbated the lower classes' sense of betrayal by a government upon which they had come to rely for basic necessities. The Saudi government's traditional approach to opposition was to silence or exile dissenters, but the proliferation of communications media and information technology has enabled off-shore opposition groups, such as the London-based Committee for the Defense of Legitimate Rights (CDLR), to voice their dissent from a safe distance. The royal family has attempted to maintain its traditionally close links to the populace, and is taking careful steps to liberalize society in ways that are not threatening to religious norms or the monarchy, but there is increasing pressure for more radical changes, especially for limiting the power of the monarchy or eliminating it altogether.

Table 83.
Saudi Arabia in Statistics

Metric	Value[343]	Remarks
Population	17.88	millions, 1995
Population density	7	per km^2, 1995
GDP	120.2	US$billions, 1994
GDP per capita	6,868	US$, 1994
Telephones	1,719.4	thousands, 1995
Teledensity	9.62	per 100 inhabitants, 1995
Teledensity in largest city	18.86	per 100 inhabitants, 1995
Cellular subscribers	16.0	thousands, 1995
Cellular density	0.09	per 100 inhabitants, 1995
PCs	600[344]	thousands, 1995
PC density	3.36	per 100 inhabitants, 1995
Television sets (receivers)	4,600	thousands, 1995
Television density	26.9	per 100 inhabitants, 1995
Literacy rate	62.8[345]	per 100 inhabitants older than 15 years, 1995
Infant mortality	46.4[346]	per 1000 inhabitants, 1996 estimate

Networks in the Kingdom

Saudi Arabia has been something of an enigma when it comes to Internet diffusion. The Kingdom has had an Internet connection for several years, although public access has not been allowed. The Kingdom also sponsors many Web pages, both commercial and government, but these Web sites have all been established outside of the country, mostly in Bahrain or the United Kingdom. While the GulfNet regional network has been operational for more than ten years, and LANs are in wide use, there is little in the way of inter-network connectivity, and little awareness of the potential uses of wide-area networking.[347]

The region's first wide-area network, GulfNet, was created in 1985 by the King Abdulaziz City for Science and Technology (KACST) and IBM. It was an SNA (Systems Network

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

[344] An estimated 105,000 additional personal computers were delivered to Saudi Arabian customers in 1996, bringing the PC density up to 3.94 per 100 inhabitants. See "PC sales boom…," *op. cit.*

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

[346] *ibid.*

[347] Andrew George, personal communication (20 May 1997). Mr. George is the Director of the World Trade Center Riyadh. The World Trade Center Association operates an international proprietary network which it is considering converting to the Internet Protocol. The World Trade Center Riyadh is one of the companies seeking an ISP license in the Kingdom. See also Mesher, "Surfing…," *op. cit.*, p. 18.

Architecture) network in a star configuration with the mainframe hub in Riyadh. Initially there were ten additional nodes in the Kingdom and three in Kuwait (Table 84) connected via 9.6 Kbps leased lines. International connectivity via a link to BITNET in the United States was established in 1987.[348] There were also nine dial-up lines supporting more than 70 Saudi institutions in an arrangement referred to as KACSTnet. KACSTnet and GulfNet subscribers had access to nine on-line KACST databases; KACSTnet subscribers also had access to 35 additional databases maintained on CD-ROM by KACST.[349] The principal purpose of GulfNet was to provide information support for academic institutions and scientific research.

Table 84. GulfNet Nodes, 1994[350]

Node	Location
King Abdulaziz City for Science and Technology	Riyadh
King Saud University	Riyadh
Institute of Public Administration	Riyadh
Gulf Cooperation Council Headquarters	Riyadh
Saudi Ministry of Health	Riyadh
King Faisal Specialist Hospital and Research Center	Riyadh
King Fahd University of Petroleum and Minerals	Dhahran
King Faisal University	al-Ahsa
King Abdulaziz University	Jeddah
Islamic Research and Training Institute	Jeddah
Umm al-Qura University	Mekka
Kuwait Institute of Scientific Research	Kuwait City
IBM Kuwait Scientific Center	Kuwait City
Kuwait University	Kuwait City

In addition to the BITNET link, the Sahara BBS has enabled Saudi subscribers to exchange e-mail between themselves and over the Internet since 1994.[351]

A national X.25 packet-switching network, *al-Waseet* ("Carrier"), was procured from Siemens (FRG) by Saudi Telecom, the national telecommunications monopoly owned by the Ministry of Posts, Telegraphs, and Telephones (MPTT), and commissioned in December 1989. The network comprises three switching nodes, in Riyadh, Damman, and Jeddah, 95 concentrators ("Advanced Network Nodes") in 45 locations, and an international X.75 link to more than 50 foreign data networks. Point-to-point data communications are also available over 9.6 Kbps leased lines.[352] In addition to providing business data communications and a nationwide network for the Saudi Arabian Monetary Agency, more than 15,000 point-of-sale (POS) terminals installed in stores around the country are connected to their respective corporate headquarters over *al-Waseet*. The packet-

[348] Yusuf Mansuri and Abdulaziz al-Zoman, *Towards A National Academic and Research Information Super Highway*, unpublished monograph (Riyadh: National Communications Networks, undated, 1997), p. 2.

[349] Saad Bakry, Abdullah al-Dhelaan, and Abdulaziz al-Muammar, "Gulfnet's Available Information Services," *Middle East Communications* 9 (February 1994), pp. 23-24.

[350] *ibid.*

[351] Al-Maskari, *op. cit.*, p. 19; Mesher, "Surfing…," *op. cit.*

[352] "Telecommunications in the Kingdom of Saudi Arabia," *CommsMEA* 6 (January 1996), pp. 18-19.

switched data network is also connected to the Kingdom's new ERMES-based digital paging network, allowing PC users to send alphanumeric pages from their computers.[353]

Networking used to be hindered by the inadequate telephone system. Most of the country's telephone lines were analog in the mid-1990s, and dial-up connections were normally limited to 9.6 Kbps, insufficient for more intensive Internet activities than electronic mail, Usenet newsgroups (which, however, were not available in Saudi Arabia), and small file transfers.[354] The up-grading and expansion of the public switched telephone network (PSTN) as part of the Telecommunications Expansion Project No. 6 (TEP-6) is rapidly improving the situation for long-distance communications and within certain urban areas. The PSTN is being expanded by 1.5 million lines and transmission and switching are being digitized.[355] These improvements, which cost almost US$4 billion and are to be completed in 2001, will make the PSTN more "networking friendly." The Saudi government is already discussing the possibility of a further expansion of the telephone network by another 4.6 million lines (i.e., more than doubling the post-TEP-6 network).[356] At present, the creation of dedicated data backbone networks is not being considered. However, even at this point, technology is no longer the principal constraint on the establishment of nationwide Internet access.

In 1994, as fiber optic networks became more common on university and research center campuses, LANs started migrating to the Internet Protocol, establishing internal e-mail and ftp capabilities. By 1996, even Web pages were featured on these intranets.[357] An international IP link was established in 1994 between the King Faisal Specialist Hospital and Research Center (KFSHRC) (www.kfshrc.edu.sa) and International Medical and Educational Data (IMED) Link in Washington, D.C., as part of the Saudi-U.S. University Project. IMED Link established the Washington Coordination Center to manage Saudi Internet communications and also established Saudi.net, which claimed to be the Kingdom's first ISP.[358] However, the IP addresses allocated to both the IMED Link and Saudi.net networks are registered to IMED Link, and all the networks' servers are located in Bethesda, Maryland.[359] Coincident with the establishment of the satellite link to the United States, KACST was registered as the *.sa* national TLD manager. KACST set up its own domain (kacst.edu.sa) and established an IP link via microwave radio to the KFSHRC. It was planned that the microwave link would be replaced by fiber optic cable and that KACST would

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[353] Farid Mashhadi, "Bridging the Gulf," *Middle East Communications* 11 (September 1996), p. 32.

[354] John Cooper, "The Middle East gets caught in the Internet," *Middle East Economic Digest* 39 (8 December 1995), p. 3.

[355] "$4,000 million telephone deal boosts business," *Middle East Economic Digest* 38 (20 May 1994), p. 27.

[356] "Saudi Arabia: In Brief…," *Middle East Economic Digest* 41 (1 August 1997), p. 26; "Saudi to expand telecoms," *Middle East Communications* 12 (August 1997), p. 5

[357] Mesher, "Surfing…," *op. cit.*

[358] <http://www.imedlink.net/imedlink/services/serframe.htm> (19 January 1998). IMED Link also claims it is "the sole provider of internet services to the Kingdom of Saudi Arabia and is officially recognized as a European Internet Local Registry for Saudi Arabia under the top-level domain name of 'saudi.net" (<http://www. imedlink.net/imedlink/services/isp.htm> (19 January 1998)). However, neither IMED Link nor Saudi.net are registered with RIPE or appear in the RIPE database. An IMED Link point of contact, Garry Pammer, does appear in the RIPE database, in an entry he submitted himself using a Saudi.net e-mail address. The entry erroneously prefixes his telephone number in Maryland with the country code for France.

[359] IMED Link notes that it "is a provider of SANITIZED INTERNET ACCESS" (emphasis in original). "This optional service involves the continuous review of internet pages to deny access that might be offensive to local cultural or religious beliefs. Current sanitized internet access is being provided to the Royal Embassy of Saudi Arabia [in Washington, D.C.] and the Islamic Saudi Academy in Alexandria, VA." *ibid.*

then offer Internet connections to the country's academic and research communities, while commercial ISPs would be licensed to provide public access services via KACST.[360]

In April 1995, the Saudi authorities decided to migrate GulfNet to the Internet Protocol to create "an information super highway connecting academic institutions, research centers, and public libraries in Saudi Arabia," and proposed to call the network SaudiNet. The conversion had not taken place by May 1997, however, in large part because the PTT could not supply the required high-speed (initially, 64 Kbps was requested) leased lines.[361]

In January 1996, KACST implemented a pilot project whereby some dial-up connections were made available to KACST staff and faculty at the King Saud University (KSU) (www.ksu.edu.sa). However, this project was shut down by the authorities in June 1996, reportedly due to concerns that inappropriate material was being accessed by unauthorized users.[362]

In January 1997, KACST dropped its BITNET link with George Washington University (Washington, D.C.), acting as the gateway between GulfNet and the Internet via its link to KFSHRC.[363] In May 1997, KACST implemented the first phase of the National Library Network, linking KACST's public network with the Internet via a router and the microwave link to KFSHRC and KACST's internal LAN to the public network with an isolation router.[364] The KACST home page on the Worldwide Web (www.kacst.edu.sa) received more than 250,000 hits during 1997.

Throughout 1997, KACST was pushing the conversion of GulfNet to the SaudiNet configuration; that is, a nationwide TCP/IP backbone carried on the telephone company's new fiber optic network and connecting some existing GulfNet nodes in Saudi Arabia along with other major centers (Table 85). It was proposed to establish main hubs at KACST (presently the sole hub), the King Fahd University of Petroleum and Minerals (KFUPM) (Dhahran), and King Abdulaziz University (KAAU) (Jeddah), with the backbone links running at a minimum bandwidth of 1.544 Mbps, increasing to 45 Mbps within 3 years. The network will initially comprise a single set of Class C addresses (198.77.103).[365] It was reported that impediments to implementing SaudiNet included an "acute shortage of qualified and skilled" staff for the SaudiNet Network Operations Center (SaudiNOC), which must be operational around the clock, and the domain registry, the Network Information Center (SaudiNIC).[366]

As of January 1998, there still is no public access to the Internet in Saudi Arabia. Although the concept has been approved in principle, the details regarding the authorizing of commercial ISPs have not been worked out as major Saudi corporations continue to vie for an exclusive license.

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[360] Yusuf Mansuri and Abdulaziz al-Zoman, *Moving Towards Internet*, unpublished monograph (Riyadh: National Communications Networks, 18 December 1996), p. 1.

[361] Abdullah al-Dhelaan, personal communication (19 May 1997). Dr. al-Dhelaan is Associate Professor of Computer Sciences in the College of Computer and Information Sciences at King Saud University, Riyadh.

[362] "Saudi clamps down on Internet," *Middle East Communications* 11 (June 1996), p. 5.

[363] Mansuri and al-Zoman, *Towards A National Academic…*," *op. cit.*, pp. 2-3.

[364] Abdulaziz A. al-Muammar, personal communication (29 May 1997). Mr. al-Muammar is the Director of National Communications Networks at KACST.

[365] Yusuf Mansuri, *IP Number allocation*, Final Draft, unpublished monograph (Riyadh: National Communications Networks, 15 March 1997), p. 3.

[366] Mansuri and al-Zoman, *Towards A National Academic…*," *op. cit.*, pp. 5-9.

Table 85. Proposed SaudiNet Baseline[367]		
Node	Location	GulfNet Node?
Imam Mohammed bin Saud Islamic University	Riyadh	No
Institute of Public Administration	Riyadh	Yes
Islamic University	Medina	No
King Abdulaziz City for Science and Technology	Riyadh	Yes
King Abdulaziz Public Library	Riyadh	No
King Abdulaziz University	Jeddah	Yes
King Fahd National Library	Riyadh	No
King Fahd University of Petroleum and Minerals	Dhahran	Yes
King Faisal University	al-Ahsa	Yes
King Saud University	Riyadh	Yes
King Saud University Campus	Abha	No
King Saud University Campus	Qassim	No
Umm al-Qura University	Mekka	Yes

Internet Dimensions

The following paragraphs assess the state of the Internet in Saudi Arabia, bearing in mind that there is in fact Internet use and expertise, although local public access to the Internet has not been implemented. The dimensions are summarized in Table 86 and depicted in Figure 48.

Pervasiveness The Internet in Saudi Arabia can best be characterized as Experimental (Level 1), although some commercial organizations have developed considerable expertise in designing and implementing IP-based networks and Web pages. However, fewer than one in a thousand Saudis has access to the Internet and then only for official purposes. The private sector must connect to the Internet outside the Kingdom via a long distance telephone call.

Geographic Dispersion The Internet is concentrated in one city (Riyadh) while plans for its future development are finalized. In the near future, probably during 1998, the Internet will be deployed nationwide as the GulfNet SNA network is converted to TCP/IP (SaudiNet) and expanded. There is only a single link between KACST, which will provide Internet connections to Saudi ISPs, and the Internet in the United States, although Saudi Aramco has its own satellite link to the Internet for its private use within the company. Saudi Arabia is rated at Level 1 (Single Location) at this time. Later this year, this should increase to Level 2 (Moderately Dispersed). Should the Saudi Aramco Internet link be connected to the principal Internet backbone in Saudi Arabia, the level would be raised to 3 (Highly Dispersed).

Sectoral Absorption The principal user of the Saudi Arabian Internet is a subset of the academic community. Some government agencies have been involved with decision-making regarding the Internet, but there is no evidence that government employees actually use the service. The largest companies use the Internet through off-shore connections, but most Saudi companies have yet to try this new technology. Along with the academic community, the health sector was an early proponent and adopter of the Internet and facilitated the first, and as yet only, inter-

[367] *ibid*., p. 7.

national Internet connection. However, in every sector Internet use is still judged to be rare, resulting in an overall rating of Level 1 (Rare).

Dimension	Level	Explanation
Pervasiveness	(1) *Experimental*	Fewer than one in 1,000 Saudis has access to the Internet, and then only for official purposes. The parameters of Internet use are still being debated.
Geographic Dispersion	(1) *Single Location*	The Internet exists only in Riyadh, from which the only international link to the Internet was established. Plans to rapidly deploy the Internet nationwide are likely to come to fruition during 1998.
Sectoral Absorption	(1) *Rare*	Although every constituency is using the Internet, those with local or off-shore accounts or a Web presence are still in the minority.
Connectivity Infrastructure	(1)	The infrastructure is minimal, with no backbone or exchanges and no dial-up or leased-line access. There is only a single international link.
Organizational Infrastructure	(1) *Single*	Such Internet services as are currently available are offered by KACST.
Sophistication of Use	(1) *Minimal*	Lack of Internet availability hampers the development of expertise and the assimilation of Internet use into routine use.

Table 86. Internet Dimensions for Saudi Arabia

Connectivity Infrastructure is barely at Level 1 in Saudi Arabia. There is no IP backbone, a single slow international link, no Internet exchanges, and no access other than via LANs connected to networks at KACST or KFSHRC. The situation is likely to change during 1998, when a nationwide, high-speed backbone will probably be implemented and public connections established via modems and leased lines, although the rating will likely remain at Level 1 for the foreseeable future.

Organizational Infrastructure is at Level 1 (Single), since Internet access is concentrated at KACST. Commercial ISPs have been authorized, although none have been licensed to date. When ISPs are licensed, however, they will still derive their Internet access from KACST (Level 2 —Controlled).

Sophistication of Use is Minimal (Level 1). There are very few Internet users in Saudi Arabia, in relative and absolute terms. Public officials associated with the Saudi Internet are occupied with establishing the management parameters for public Internet service and planning for a nationwide backbone. Private users of the Internet engage in limited activities (e.g., e-mail, Web browsing, Web page maintenance) through off-shore services. Once public service is made available, however, the Internet will take hold (i.e., rise to Level 2) quickly.

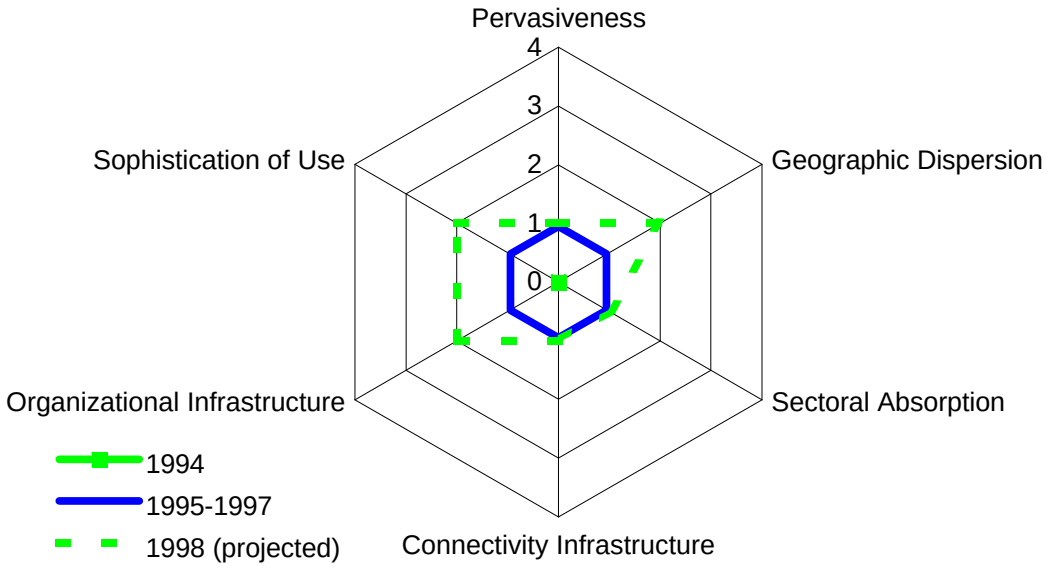

Figure 48. Internet Dimensions for Saudi Arabia

Determinants

The major determinants that are affecting the development of Internet service in Saudi Arabia are described in Table 87.

For a variety of social and internal security reasons, the Saudi regime is concerned lest it lose control over internal and external communications and sources of information for the Saudi people. This concern delayed the approval of Internet use in Saudi Arabia, probably by at least two years, and is similar to but has more dimensions than the concern that first delayed the introduction of mobile (cellular) telephony in the Kingdom.[368]

In addition to social and security concerns, the diffusion of the Internet has been hampered to some extent by the typical Saudi way of doing business, a cultural factor that affects the operations of both the public and private sectors. Centralization around a single leader is a singular feature of traditional Saudi leadership practices that has carried over into modern corporations and the government. Whether this is a source or result of a lack of democratic processes and tradition, a key feature is the concentration of strategic information at the top.

[368] George, *op. cit.*

Table 87. Determinant Impact	
Determinant Quality	Affected Dimension
State monopolization of telecommunications	Pervasiveness—Currently severely limited by unavailability of public access; potential future limits due to access controls or pricing Sectoral Absorption—Currently limited to small fractions of the academic and health sectors Organizational Infrastructure—Limited by government policy to a few select organizations; competition is not contemplated
Intent to control information content and flow	Pervasiveness—Potentially very restrictive policies may constrain Internet take-up in the future Sectoral Absorption—Internet use by commercial sector and individuals may be constrained by restrictive information policies; government participation may be limited in order to limit potential for access to certain types of official information
Internal security concerns	Pervasiveness, Sectoral Absorption—Explicit controls on Internet access and use to prevent use by dissidents may limit use by others Organizational Infrastructure—Development of multiple, competing ISPs may be hampered or prevented by security policies
Responsiveness to cultural and religious concerns	Pervasiveness—Concerns to protect society from harmful influences may constrain Internet use to a point where it is not attractive to a meaningful segment of the potential user population Organizational Infrastructure—Desire to constrain Internet access will likely mandate the maintenance of a small provider community
Technology investment policy	Connectivity Infrastructure—Acquisition of modern technology is a high priority that will speed the improvement and expansion of the supporting telecommunications infrastructure
Geographic obstacles to development	Geographic Dispersion, Connectivity Infrastructure—Pockets of population widely separated by deserts makes establishment and maintenance of terrestrial links difficult.
Basic but improving telecommunications infrastructure	Geographic Dispersion, Connectivity Infrastructure—Internet use is constrained by poor telephone lines in many areas. Projects currently underway will provide a nationwide digital backbone
Strong central authority	Pervasiveness, Sectoral Absorption—Internet users, private and commercial, connect at the sufferance of the government, which may choose to limit the number of accounts or preclude Internet use by specific individuals or whole classes of people Organizational Infrastructure—Maintenance of central control dictates the establishment and maintenance of limited access routes.
Evolving stakeholder communities	Sophistication of Use—A younger generation, educated in the West and more technically literate, is coming to the helm at public and private organizations. These new leaders are better able to integrate advanced technology into their operations, and are more open to modifying their operations to take advantage of new technologies.
Exclusivist and competitive commercial environment	Pervasiveness—Success at limiting competition may constrain Internet development, depending upon investment and pricing policies Organizational Infrastructure—Every potential ISP desires to have an exclusive license

However, two factors are causing this traditional form of centralization to slowly evolve: Saudi society is undergoing a generational change, with second-generation Saudis, now entering their 40s, assuming more responsibility. This generation tends to be more technically educated than its elders, more cosmopolitan, and more open to new ideas and more aware of the existence of alternative forms and ideas internationally. Secondly, Saudi organizations, both public and private, have grown considerably in the past ten years, and the increasing complexity and scope of operations is not conducive to individual control, forcing central family figures to delegate. The emphasis on family control, of the country and its major corporations, remains strong and causes new social tensions as the younger generation seeks greater autonomy and authority.[369]

Coincident with the 1994 registration of KACST and establishment of a limited-use Internet link, an interagency government commission was appointed to consider the benefits and potential problems of public Internet access. The commission comprised 18 officials from ten government departments, including the Ministries of Defense, Foreign Affairs, and Defense, KACST, and KSU, and was chaired by Dr. Saleh Abdulrahman al-Athel, the President of KACST. Each organization represented on the national commission formed its own, internal committee to examine Internet-related issues. Additionally, the commission formed issue-specific working groups and awarded contracts for studies. One such contract was given to members of the Computer Sciences Department at KSU, for a three-year study of the technical feasibility of expanding GulfNet and converting it to TCP/IP operation. In response to this tasking, 13 research reports were published.[370]

The evaluation process was extensive and dealt with national security, moral, and social issues. Specific concerns included the availability of pornographic material, instructions on how to commit suicide, anti-government propaganda, and weapons construction information on the Web, and the potential for proselytization of Saudi Muslims by foreign religions via the Web and e-mail. In early 1997, the commission made its final recommendation to the Council of Ministers, that public access to the Internet be allowed via a firewall to be maintained by KACST to reduce the potential for Saudis to access inappropriate information. The Council of Ministers endorsed this recommendation and forwarded it to the 60-member *Majles al-Shura* for ratification. On 4 April 1997, two local newspapers carried the announcement that the Crown Prince had ordered the MPTT to coordinate with KACST to establish local Internet service and "to coordinate with the government sector" to administer a national network.[371] Wide-spread press coverage of the decision was delayed for more than a month for unknown reasons.[372] By that time, major commercial organizations were vying for an ISP license, each hoping to become the exclusive purveyor of Internet services to the Saudi public.[373] Leading contenders include the Jeraisy Group, led by Shaykh Abdulrahman A. al-Jeraisy, which developed and operates a large, IP-based intranet; national goods distributor Silki La Silki Company Ltd.,[374] in conjunction with the Arab Radio &

[369] George, *ibid.*

[370] Al-Dhelaan, *op. cit.*

[371] The decision was announced in front-page articles in the local newspapers *al-Madina* and *Okaz*. "QuickRead of the Saudi Media," U.S. Information Service Riyadh (5 April 1997), p. 1.

[372] "Internet to enter Kingdom soon: KAACST," *Arab News* (12 May 1997); "Internet access to be allowed by King Fahd," *Middle East Communications* 12 (June 1997), p. 10; "Limited Internet Access for Saudi Arabia," *USA Today* (5 November 1997).

[373] See, for example, the SilkiNet advertisement in *Arab News* (14 May 1997), p. 9, and Javid Hassan, "New joint venture to facilitate Internet access in Kingdom," *Arab News* (14 May 1997).

[374] The domain silki.net is registered to the Kingdom Holding Company in San Francisco.

Television Company (ART), which operates a multi-channel direct-broadcast satellite television system in the region, and Sakhr Software Company; the World Trade Center Riyadh; Makshaff Services Limited's Computer Support Centre, Makshaff being a conglomerate owned by Prince Khalid bin Sultan, the Defense Minister;[375] the Prince Sultan Programme for Educational and Medical Telecommunications (www.sultancharity.org), which recently claimed to be the sole license ISP in the Kingdom;[376] and Prince Alwaleed bin Talal bin Abdulaziz, well-known international investor (e.g., EuroDisney in France), who also claims to be establishing the only public Internet service in the Kingdom.[377]

Problems and Prospects

The prospects for further development of the Internet depend in large part upon the degree to which the government believes its own experts, and secondarily on the absence of any significant Internet-enabled scandal. The Saudi royal family, at the behest of the religious and security authorities, is approaching the Internet with caution. There is a recognition of the potential benefits, but a belief that the potential benefits are not worth allowing harm to come to either the government or the populace. At least the academic community is convinced that the risks can be mitigated through technical means, and they appear to have convinced the rest of the government, at least for the moment. The effective implementation of a firewall, proxy server, and/or other control systems is the *sine qua non* of a future public Internet service in the Kingdom.

Business practices have also been a barrier to progress, as is seen by the current delay while the moguls and magnates compete for an exclusive position in the Internet market. Given the current lack of competition in telecommunications, a monopoly on Internet service provision by the MPTT would seem natural. That the government has been convinced, largely by the academic community, that such a situation would be sub-optimal is a significant development. That the business community believes it can replace the government's monopoly with one of its own is disheartening but not unexpected. However, even should the government hold to its original plan and license several ISPs (having as many as ten was discussed), each would still have a monopoly within its assigned geographic market, while the government maintained its monopoly on the international link to the Internet. The lack of true competition will probably not be a significant negative factor in the Internet's near-term development, since there is a great deal of pent-up demand, as with other telecommunications services, and the cost of Internet service will not become a significant factor in future growth for at least several years.

There have been some hopeful signs regarding privatization of, but not competition in, telecommunications services. Following a Cabinet meeting in December 1997, the Minister of Information, Fouad al-Farisi, announced that Saudi Telecom would be privatized. The company is to be converted to a joint stock company known as the Saudi Telecommunications Company (STC) by July 1998. The structure and capital of the STC, which will take over ownership and operation of all of the Kingdom's telecommunications assets, have yet to be determined. The Minister of PTT, Dr. Ali al-Johani, speculated that, "in the first phase," the STC would be valued at more than SR

[375] John Grand, personal communication (20 May 1997). Mr. Grand is the Manager of the Computer Support Centre.

[376] "In Brief… Saudi Arabia," *Middle East Communications* 12 (August 1997), p. 3. The Programme was said to have taken over responsibility for Saudi Internet operations from the KACST.

[377] Adnan al-Husseini, "ISP News from the Middle East," Dabbagh Information Technology, <http://www.dit.net> (8 January 1998).

10 billion (US$2.67 billion) and that the company would eventually become the largest employer in the Kingdom, with more than 70,000 employees (up from 20,000 today).[378] At some time in the future, probably not before 2000, all of the shares of STC will be offered for sale.[379] Between now and then, the company's assets must be inventoried and valuated to enable the establishment of a rational stock price. The MPTT will act as the telecommunications regulatory authority. There are no indications as yet whether the MPTT will license competitors to the STC, nor have the issues of foreign ownership or foreign operator participation in the STC been determined.[380]

[378] Embassy of the Kingdom of Saudi Arabia, Washington, D.C., "Saudi Telecommunications Company (STC)," Press Release, 18 December 1997, <http://www.saudi.net/press_release/97_spa/97_12_3.html> (19 January 1998).

[379] Embassy of the Kingdom of Saudi Arabia, Washington, D.C., "Telecommunications Decision," Press Release, 15 December 1997, <http://www.saudi.net/press_release/97_spa/97_12_3.html> (19 January 1998).

[380] "Telecoms privatisation to begin in six months," *Middle East Economic Digest* 42 (2 January 1998), p. 24.