A revolution is slowly transforming Qatar’s small, vibrant economy of less than a million people. ICT is propelling the country to greater progress and prosperity. And although Qatar has been a late entrant here, having made its first serious moves only in 2005, its leadership is convinced that ICT can bring far-reaching changes. That has been the cornerstone of Qatar’s unfolding technology revolution.

These changes have been dovetailed with ongoing economic reforms. The aim is, through ICT, to create a core engine for a competitive economy, universalize access to social services, and create a knowledge-based online society. There are also hopes that ICT will have a technology multiplier effect in all sectors, extend the reach of political reforms, and help Qatar become a fully developed nation.

The effect of changes is already being felt. In a commendable feat, Qatar is ranked 32nd in the 2007–2008 Networked Readiness Index (NRI). With a full-fledged national plan in place, initiatives are taking place on many fronts: policy reforms; steps with regard to security concerns; ICT initiatives in health care, education, e-government, and infrastructure; and deregulation in the telecommunications sector. Qatar also boasts some of the highest penetration rates in telecommunications (both fixed line and mobile) and Internet in the region (see Figure 1).

Typically, with a small population and high per capita income at over US$62,000, many of these changes would be easy to make. But several challenges and roadblocks have had to be overcome over the last few years, including an acute shortage of trained workers, social norms and misconceptions about technology, and inter-ministerial and agency coordination issues. However, these have not proven serious deterrents. Ultimately, strong leadership and courage of conviction are pushing the nation further up the technology roadmap.

The purpose of this chapter is to present an overview of Qatar’s transformation into a knowledge economy and a flag-bearer of technology-driven excellence in the entire region. The following section provides a broad overview of the vision and the framework of
ICT-enabled change in Qatar. Next, key strategic initiatives in Qatar’s ICT agenda are described, including efforts in e-education, cyber-security, e-government, and e-health. The following sections outline the key implementation hurdles faced by Qatar and identify best practices and lessons for other nations engaged in similar processes of change. The concluding section lists some future directions in the country’s transformation into a competitive knowledge economy of the 21st century.

A national vision and framework

ICT is slated to create the core engine of an information-based economy, universalize access to social services, and create a knowledge-based online society. Building technology literacy and capability among the people of Qatar will be crucial in view of overcoming the country’s shortage of skilled manpower. In addition, technology is envisaged to produce transformational effects across all sectors of the national economy, facilitate ongoing social and political reforms, and firmly establish Qatar as a developed nation.

Therefore, its ICT strategy and master plan is in tandem with the National Vision of Qatar, which seeks to adhere to principles of equality, democracy, and human development. While guided by international best practices, however, the strategy is tailored to the country’s unique circumstances and requirements. The underlying philosophy is that technology and infrastructure should not be ends by themselves, but rather should be facilitators for economic and social gains.

The first major step on this journey was accomplished when, by a Royal Decree in 2004, Qatar established the Supreme Council of ICT (ictQATAR) with a mandate as both regulator and enabler of the ICT sector. In May 2005, its vision and mission was unveiled, and thereafter ictQATAR embarked on its plan of fulfilling the key objectives of the country’s ICT strategy. Guided by a clear, authoritative mandate, ictQATAR serves as regulator and champion of the ICT sector. Its strength in leading, supporting, and coordinating ICT efforts is rooted in three design characteristics that are important to establishing a robust ICT implementation organization:

• ictQATAR has strong political champions. As ICT tends to involve launching programs across multiple sectors and working through multiple ministries, resistance to change can be high and clear leadership is essential to revamping departmental power bases and entrenched bureaucracy. Because of this resistance, an ICT organization requires the backing of senior political leadership to visibly champion ICT and to give the implementation organization real authority to make change happen. Sheikh Tammim Bin Hamad Al Thani, the Heir Apparent of Qatar and a strong advocate of ICT in the nation, is the Chairman of ictQATAR.
• ictQATAR is a single entity with multiple stakeholders. Its effectiveness springs from its ability to achieve coherent policy development and implementation with involvement of key ICT stakeholders. ictQATAR has relied on collaboration with various government bodies that recognize the effectiveness of ICT programs to better serve their constituents and employees.

• ictQATAR has an independent budget. ICT efforts require sizeable financial investment and an ongoing commitment of resources to promote usage and adoption. In return for its independent budget for programs, ictQATAR has clear performance metrics so policymakers can measure what gains and successes are achieved for their substantial investment.

Figure 2 illustrates the integrated approach adopted by Qatar to achieve its long-term vision. Each of the components plays a complementary and indispensable role. From the start, ictQATAR began engaging in a focused dialogue with institutions in the public and private sectors that have direct input, contribution, and influence on the development of ICT in Qatar.

Qatar’s ICT plan extends beyond the projected upgrading of the sector’s physical infrastructure into nine national programs. It was understood that upgrading this infrastructure, although critical to success, is ineffective unless citizens and businesses have access and incentive to utilize it. Therefore, the country built its ICT national programs on the environment, readiness, and usage (ERU) framework. The elements of this framework range from setting the right environment (through establishing conducive market conditions, appropriate policies, essential infrastructure) and increasing readiness of citizens, businesses, and government (by building awareness, trust, skills, and access), to providing the applications that will drive adoption and increase usage (e.g., applications and content for specific sectors such as e-health and e-education).

Figures 3 and 4 provide details on the key components of Qatar’s master plan for ICT-enabled change. The national plans (see Figure 3) include: developing state-of-the-art infrastructure; innovation and capability-building; developing the necessary regulatory and legal framework; ensuring information safety and security; having an inclusive society; and focusing on information technology in the areas of education, health, government, and business. With this framework in place, and to achieve its broad objectives, ictQATAR has set in process a series of change initiatives as described in the following section.

Figure 4 presents a summary of the key aspects considered within the overall framework for deciding Qatar’s ICT strategy. The top row captures elements of the different subdimensions of the environment for ICT in the state of Qatar—market, political, and infrastructure. The next two rows identify elements of the readiness and the adoption of ICT by the three main actors in the economy—citizens, businesses, and the government. The
last row lists aspects of the impact of the adoption of ICT on the above three actors. Cumulatively, Figure 4 captures all key aspects of ICT readiness, adoption, and impact in Qatar.

Key initiatives
ictQatar introduced key initiatives addressing all three elements of the ERU framework: environment, readiness, and usage. Several of the most crucial are discussed in this section.

Telecommunications liberalization
ictQatar moved almost immediately to liberalize the telecommunications sector. Developing and implementing a transparent process to open the market to competition was seen as critical for providing better value for consumers and for the rapid development of advanced products and services needed to support a growing, diverse economy. Three main objectives have driven Qatar’s telecommunications liberalization:

- to foster an efficient telecommunications sector to benefit society,
- to create a showcase for successful sector reform, and
- to provide a sustainable business environment.

The process of telecommunications liberalization has been divided into two phases: first, World Trade Organization–mandated telecommunications services and infrastructure deregulation; and second, deregulation in areas such as e-commerce and e-legislation. The Telecommunications Law of 2006 enhanced existing laws and gave the regulatory body within ictQATAR the ability to issue licenses and to sanction additional spectrum. The Regulatory Authority was also given powers in competition analysis, the power to declare the incumbent provider, Qatar Telecom (Qtel), to be dominant, and the power to choose a second operator in the mobile and fixed-line segments of the market.

Because the size of the national market in the foreseeable future is unlikely to sustain more than two fixed and mobile infrastructure networks, ictQATAR began the liberalization process by offering one additional mobile license and one additional fixed license to new operators to compete with Qtel. The awarding of these licenses includes the possibility that an alternative infrastructure to Qtel’s will be created. ictQATAR intends to review the market development of the sector by 2010. The review will include an assessment of the number of operators the market can sustain, as well as technological developments such as Mobile WiMAX and 4G, among others.

In addition to licensing, ictQATAR is developing a full regulatory framework that will include dominance designation and conditions, interconnection and access rules, tariff policy, spectrum and number policies, con-
sumer protection, and dispute resolution. Other areas that will come under its focus will be electronic transactions legislation, the application of UNCITRAL principles, domain name procedures, and e-government processes.

Integrated e-government
Qatar’s e-government journey began in 2003. The first-generation e-government program produced a variety of online services, including issuance of entry visas, birth certificates, and health cards; renewal of driving licenses; Islamic charity payments; and payments of traffic fines and utility bills. The program was a frontrunner among the Gulf States in the use of smart cards for authentication. The e-government organization was integrated into ictQATAR in 2005, along with many valuable lessons learned for the way forward (see the last two sections of this chapter on “Overcoming implementation challenges” and “Emerging best practices” for more details on the lessons learned).

Box 1: Qatar’s telecommunications transformation: Major milestones

- 1987: Establishment of the Qatar Public Telecommunications Corporation
- 1998: Qatar Public Telecommunications Corporation rechristened Qatar Telecom (Qtel)
- 2002: Establishment of the Information Technology and Communications Committee
- 2004: The formation of the Supreme Council for Information Technology (ictQATAR)
- 2006: Promulgation of the Telecommunications Law providing the regulator the power to issue new licenses
- 2007: Vodafone Consortium selected as a second mobile operator in Qatar and process started for second Fixed Line Operator
A nationwide effort is now underway to use ICT to make government work even better for residents, citizens, and visitors. Qatar is committed to a customer-focused approach to running the government in all areas. Across ministries, councils, and authorities, the second-generation e-government initiative will result in an integrated, state-of-the-art government with reduced redundancies, increased transparency, and heightened efficiency.

Qatar’s plan to connect people with the government will include a high level of readiness for ICT capabilities in public administration and e-government information and services to make life easier. A comprehensive reference model for ICT architecture and standards is ready to roll out across all government agencies—a significant step toward government-wide integration of ICT systems. And the government is launching Hukoomi, a one-stop portal for government information and services, including preexisting e-services and recently implemented e-services for the issuance of exit permits and business commercial registration. Hukoomi is a historic milestone—the first time ever that more than 50 entities across the government have come together online. Hukoomi will help businesses improve productivity and compete in the marketplace, and will improve convenience and satisfaction in the daily lives of everyone in the country.

The initial impact of these services has been very positive. Besides order-of-magnitude improvements in turnaround time for the issuance of permits and licenses, businesses and the public at large welcome the change in government interactions from one of unclear rules and indefinite waiting to one that is transparent and process-driven right from the first click. Similar gains in efficiency and transparency are expected with the implementation of e-procurement, an initiative that will speed up excessive procurement cycles across all industries. And existing administrative processes, such as setting up a new business—which currently requires an array of approvals from different agencies—will be greatly streamlined and simplified via an online one-stop gateway. Behind the scenes, experts are busily designing a secure information superhighway that will interconnect all government entities and enable them to operate as one ecosystem, collaborating seamlessly in the delivery of public services. Riding on the information superhighway will be many shared capabilities, including a government data center and a government-wide human resources and finance resource planning system.

An innovative series of state-of-the-art e-government programs will be implemented over the next three years. The government has already short-listed 52 initiatives that include hundreds of online services to benefit citizens and households as well as businesses and government employees. Sixteen initiatives are currently in progress, and another 12 will be launched in the coming months.

On the ICT infrastructure development level, the implementation of new e-services has been supported by two strategic initiatives: the Broadband for All program and the establishing of a Government Data Center (GDC). The Broadband for All initiative has been rolled out in tandem with the Universal Access Fund. Its charter also envisaged the creation of wireless neighborhoods covered by high-speed wireless Internet access. The setting up of the GDC aims to provide a variety of core hosting and value-added services. These include knowledge management, data storage, and centralized data management services, as well as retrieval of business, personal education, and entertainment-related information.

Enterprise development and small- and medium-sized enterprises
Qatar has a well-developed ICT strategy to benefit small and medium-sized enterprises (SMEs). The plan was developed following exhaustive analysis of market conditions and valuable interaction with stakeholders across the business landscape. The initial focus of this strategy is on heightened awareness and education about the added value of ICT to SMEs. Following this education process is the provision of business resources, ICT applications, and SME development activities.

In the business sector, the new Enterprise Development work program includes 21 projects. These will be executed in two phases, which are to be completed by the end of 2010. The Business Resource program aims at improving enterprise ICT readiness through the promotion of a readily available ecosystem of business support services (accounting, consulting, IT-integration, and legal services) at subsidized rates. The Business Application program has identified specific applications that can serve as “lighthouse” projects. These have encompassed a whole spectrum of activities, including those targeting the more intangible business segments such as national heritage. The e-Souq, for example, aims to combine the national heritage of Qatar with a modern application of e-business—that is, an online presence of a sample of shops with the option to buy online.

Another linchpin of the Enterprise Development program, particularly during its first phase, is the SME e-Business Pilot. As part of this program, a pilot group of SMEs will be selected and guided through an 18-month program that has been designed to increase the participants’ e-maturity. This will be achieved through training, joint provision of ICT-related services with a cluster of partner companies (e.g., IT-consulting and auditing), and the presence of seasoned IT coaches. The program’s objective is to demonstrate tangible ICT benefits, address the prevalent concerns of business owners and managers, and use the experience to build sustainable support structures for SMEs. Crucially, this will foster the adoption of ICT in the business community, build internal knowledge on ICT-related issues in the SME...
sector, and feed a broad awareness campaign in the next phases of development.

**E-health**

The health-care sector has seen a concerted effort by the government to build not only state-of-the-art infrastructure but also strong institutions and frameworks that will act as catalysts in bringing the benefits of e-services in this vital sector to all segments of the Qatari society.

The key stakeholders in formulating a comprehensive national e-health strategy have included ictQATAR, Hamad Medical Corporation, and the National Health Authority. Work has already started in developing and promoting e-health cards. The electronic health record will provide patients and clinicians invaluable and rapid access to medical information. Clinicians will have rapid access to their patients’ medical histories. They will receive test results in hours rather than days. Integrated and secure information systems will allow patients to schedule appointments, coordinate multiple caregivers, and consult with their health-care team—at any hour, from anywhere.

Subsequently, the focus will shift to providing online health-care services and information. Improvements in the health-care sector are augmented through organizational revamps. As e-health matures in the country, efforts are also made to beef up the online security and privacy of patients. Programs have also been put in place to share diagnostic files among various institutions.

**E-education**

Integral to Qatar’s National Vision is the government’s commitment to building a world-class educational system. Education is at the heart of the country’s drive to improve economic competitiveness and quality of life for all those in Qatar. The e-education objective is to support an individualized and flexible learning environment through technology. A technology-rich learning community is envisaged, where parents, students, and teachers have timely access to information, where teacher–student communication transcends time and geography, and where research and development are seamlessly integrated. Classrooms will be transformed into global learning centers, linking homes, schools, and society, so education truly happens anywhere, anytime.

E-learning is not limited to those of school age. ictQATAR connects adults to career-enhancing opportunities through technology, preparing them to enter the workplace, change careers, or deepen levels of expertise. ictQATAR is partnering with Qatar’s Institute of Administration Development to offer 4,000 business and IT courses for government workers. Through a single e-learning portal, busy adults can access course materials in Arabic, English, or French anytime, day or night. All courses are accredited by internationally renowned institutes.

The most advanced ICT efforts can be found in the primary and secondary education sector. In partnership with the Supreme Education Council, the chief education policymaking body in Qatar, initiatives are in place to significantly expand infrastructure and e-education projects that support improved teaching and learning. Projects include:

- Knowledge Net, a portal that allows for three-way communication between parents, students and teachers. Knowledge Net has been rolled out in 12 schools and will be scaled up substantially.
- E-Schoolbag, which holds Tablet PCs programmed with science, math, and English content benchmarked to national curriculum standards.
- Global Gateway, a collaboration with the British Council, which creates a platform for teachers to interact with their counterparts around the world to share experiences and ideas.
- Model e-school, which brings world standard ICT best practices for education to a few select schools that can serve to stimulate the adoption of similar practices in other schools.

By 2010, Qatari Independent Schools—government-funded schools created to promote creativity and critical thinking—will be competently using ICT to enhance learning and improve student outcomes.

**Strengthening cyber security**

For Qatar, information security and the safety of young and adult Internet users is an absolute priority. To safeguard users as well as industry and government information and systems, in 2005 ictQATAR forged a partnership with Carnegie Mellon’s Software Engineering Institute (CERT Coordination Center) to establish the Qatar Computer Emergency Response Team (Q–CERT). Working with public and private institutions, as well as the general public, Q–CERT raises awareness of cybersecurity issues. Goals for the first three years have included the following:

- building incident response capability,
- creating a watch capability to monitor developments in this field, and
- working with critical organizations to establish and improve risk management practices.

Since Q–CERT is not an outsourcing provider, the idea is not for companies to simply hand over their security programs to a third party. Depending on ministry and organization needs, Q–CERT supports entities in security activities by promoting international standards.
and marshalling international support as necessary.
Q-CERT’s team of 30 professionals works with private- and public-sector organizations to build world-class information security capabilities and manage cyber-security risks. Q-CERT protects electronic data from unauthorized access, disclosure, destruction, or modification.

Since information security problems are not limited by national boundaries, Q-CERT is a member of the global Forum of Incident Response and Security Teams (FIRST). This organization fosters regional ties to security partners around the world in order to share up-to-date information about threats and vulnerabilities.

It is imperative that children are aware of cyber threats that could damage their PCs or expose sensitive information. ictQATAR is working with the Supreme Education Council to make sure parents and students in kindergarten through high school understand the need for security and cyber ethics.

Q-CERT’s mandate does not end in educating companies and citizens; one of its many tasks focused on safe sharing of data between actors in finance and in the banking sector. In addition, it has been entrusted with creating a system to recover information that is required in prosecuting legal offences. The long-term goal is to build a regional center of excellence for information security.

Overcoming implementation challenges
Inevitably, the journey toward Qatar’s ICT transformation has not been without challenges and roadblocks. In large measure, the story of Qatar’s ICT success to date has been one of recognizing and facing those challenges. These constraints are far from trivial: they include a lack of key stakeholder capabilities and readiness, a lack of ICT skills and capabilities, and unique cultural and social norms that are not necessarily welcoming to change.

Any of these challenges could have derailed Qatar’s ICT agenda. As the country’s experience in the past few years has demonstrated, leadership, courage, and conviction are required to overcome these obstacles.

Despite the significant contributions of ictQATAR, one of the implementation challenges revolves around its multiple roles as a regulator, champion, sponsor, and owner of specific IT programs. Although in theory there should be no conflict, implementation can become less seamless, with conflicts of interest between departments sometimes bubbling to the surface. In addition, where ictQATAR has acted as a sponsor, it has often been in the capacity of an incubator that sets up a project and then entrusts a government agency with running it. On occasion, this has raised the question of sustainability. The involvement of external consultants has further complicated the issue. Also, in many segments, the market is not big enough to warrant large investment from the private sector, which in bigger countries might be shouldered by the municipal government, for instance.

Stakeholder resistance, capability, and readiness
ICT programs tend to be applied across multiple sectors, and success depends on the capabilities and readiness of stakeholders to implement initiatives related to their own sector or specific organization. Moreover, resistance to change can be high if the stakeholder’s capabilities are not addressed. For effective ICT delivery, ictQATAR is implementing ICT policies and initiatives with the involvement of key stakeholders and is making stakeholder capability-building a priority.

• Formal approaches: Many agencies engaged in reform do not possess the necessary skills, tools, or processes to effectively manage the change ICT enablement brings. Across all levels of management in agencies, understanding of ICT strategies, planning, and implementation—and even of benefits realization—is in most cases insufficient. This is evidenced in agencies’ reluctance to engage early with ictQATAR on common initiatives designed to improve services. ictQATAR addresses this challenge in the ICT master plan by including stakeholder capability building in initiatives. At the strategic level, ictQATAR has developed joint working groups among stakeholders facilitated by experts to achieve common strategies and objectives. IT executive training and development programs are available to stakeholders to increase their ICT knowledge. A flexible engagement model for ictQATAR and its stakeholders takes into consideration varying levels of capability and readiness. In several instances, ictQATAR leads implementation along with the stakeholder as internal capabilities are grown.

• Informal approaches: Until recently, intermediary organizations seldom existed, as Qataris and residents did not enjoy full freedom of association. That changed when a Royal Decree granted the right of association, encouraging formation of social organizations. With this entirely new option for collaboration, ictQATAR intends to build functioning groups of stakeholders through active engagement with decision makers. The concept of professional networking will be used to kick-start collaboration. For example, a project manager might start inviting “interested parties” to topic-oriented lunch talks, exploring their shared interest for an ICT-specific topic. A “lunch circle” built around an increasingly familiar “friends of ICT-topic X” could easily form the basis for a pilot program of ictQATAR in a specific area.

Lack of human capital
A deterrent to greater technology absorption has been a shortage of ICT-skilled workers at all levels. Although the country is not alone—indeed, the region and the
world face similar shortages—the problem is more pronounced in Qatar because of the following:

- the small size of the local population;
- Qatar’s position as a relative latecomer in the technology revolution;
- the relatively low ICT-education levels in some segments of the population; and
- the economic boom created in the oil and gas sectors, which attracts talent.

Lack of ICT capability to drive implementation as well as ongoing support poses a real threat to achieving high-quality, timely outcomes. At the technology skills level, the shortage of local staff is being felt acutely, especially in areas such as IT project management, business process management, and outsourced management. The government and private industry have therefore focused on the large expatriate population. This has created some challenges, as the expatriate workforce may not be fully attuned to the culture, psyche, and aspirations of the local population. It also brings into question the sustainability of some projects.

ictQATAR and its stakeholders have recognized this challenge and have implemented capacity-building initiatives across the government and other sectors. Initiatives range from promoting basic IT literacy skills and application usage and support training, to professional development and training for IT decision makers in government and business. ictQATAR has been developing its own internal capabilities to support these initiatives by having key resource specialists work alongside its own staff. A knowledge transfer requirement for each engagement is formally written into agreements, and creative recruitment methods are used to ensure that suitable experts are onboard in a timely way.

The government recognizes the need to continue building homegrown capacities in education, research, and innovation. It has brought in the Supreme Council of Education, the Ministry of Education, Education City, and Qatar University, which are reforming the education sector to develop local talent in the long term. The private sector and various government agencies have been informing educational institutions of their long-term needs with a view to developing local courses that will meet these requirements.

### Mindset and cultural issues

As in other societies undergoing a technology-fueled transformation, the mindset and attitudes of Qatari families, institutions, bureaucracy, and other societal structures require dramatic change so that people can access technology and think differently and creatively. Although such change will take time, Qatar’s strategy to date has been to inform and engage all stakeholders.

For example, e-education programs cannot force teachers to adopt technology in the classroom. Instead, the program fosters champions and visionaries who have an impact on students and serve as role models for other teachers.

In Qatari society, the issue of inappropriate content on the Internet is a huge barrier to wholesale adoption of the technology. Some parents resist children’s Internet use, and a wide technological divide exists between children and their parents. Although parents can protect their children physically from negative influences, they feel vulnerable when it comes to the Internet. So, although many e-education initiatives are technologically and pedagogically effective, children may not enroll because of parental anxiety. To offset these barriers to successful adoption of technology, Qatar offers parents and teachers training and e-security programs.

When a rare misuse or lapse occurs in the security platform of business operations, mistrust of technology and e-operations results. It is against this backdrop that Q-CERT operates. Workshops are conducted to improve e-security and specific programs are available for top management executives, parents, and businesses.

Although the government runs broad public awareness programs, the older generation is also learning from the younger one. For example, today the Holy Qur’an is available on the Internet. The fact that children and parents can read and study their religion electronically demonstrates how technology can strengthen families. Readings from the Qur’an are even heard through computer loudspeakers in many households. This could not have been imagined by the older generation.

### Emerging best practices

No project can be successful without the leadership and vision to take it forward. That has been a key factor contributing to the success of ICT in Qatar. The vision comes from the firm belief that ICT will significantly impact Qataris’ quality of life. With Qatar’s economy leaping to double-digit growth figures over the last five years, the country’s leadership has not taken their eyes off ICT.

### A tool for development

The success of ICT is increasingly seen as a tool for development and, therefore, a way to gain a buy-in into society. This has been done irrespective of geographic location, age, or ability. ictQATAR’s main stakeholders have been not only the government and ministries, critical-sector organizations, and businesses, but also the entire population—regardless of age, gender, occupation, and economic background. When comprehensive ICT transformation got underway three years ago, the government’s perspective was that children should be afforded the same capability that ICT has given to the new generation across the world.
The e-education program in particular has not lost sight of traditionally underserved segments, such as students with special needs. In fact, by 2008–09, there will be technologies in place for the visually impaired, the hearing impaired, and those with learning difficulties. Increasingly, despite some resistance and reservations from parents, the beneficial usages of Internet and technology for families and society as a whole are helping in the spread of technology usage. A nationwide awareness campaign, “The Promise of e,” uses advertising, stakeholder outreach, and media to showcase how technology brings benefits to families, businesses, classrooms, and social interactions—every aspect of life.

A local touch
From the outset, ICT strategy has internalized a strong Qatarization component. ictQATAR has made a long-term commitment for capacity building in local ICT talent and for lessening the current dependency on the expatriate workforce. A cadre of young engineers that is gradually taking shape will ensure the sustainability of the country’s ICT master plan in the long term. Programs such as the Awareness/Community/Environment (ACE) one contain a mix of long-ranging lobbying initiatives. One of these aims at overcoming the prevalent ICT skill shortage through legal provisions. There are plans to shift from nationality-based immigration laws to skill-based ones. Focused awareness campaigns will also be in place; for example, a campaign to foster e-banking services by businesses collaborating with commercial banks.

ICT implementations to date have recognized and respected the unique aspects of the Qatari society, such as the absence of crime, the overall trusting and hospitable nature of local people’s interactions, and the resulting anxiety that the introduction of technology can engender among citizens who have been proud and protective of their way of life.

A focus on implementation
A reason for the success of these programs is that ICT implementation has been done in an integrated manner across the country. While there is one nodal agency, ictQATAR, to broadly oversee the technology reform movement, champions are spread across government, society, and business to facilitate and ensure implementation. Strong institutional frameworks, coupled with a drive to build pilot projects and centers of excellence, have dominated ICT implementation in the past few years. The e-government initiatives described above have presented the people with a new face of the government.

Success and continuity of programs are ensured through phased implementation. In the early days, mindful of its status as a relatively late entrant to the global ICT game, Qatar started introducing large numbers of programs very rapidly. But it quickly realized that speed of implementation alone would be of little help in truly advancing ICT. Instead, it understood the need to focus on a smaller number of deliverable projects. Pilot initiatives have been started, particularly in the e-education program area, and their readiness is now starting to be measured, using an e-maturity model. That way, it becomes easier to evaluate and decide which initiatives should be fully implemented.

The government has also internalized the importance of metrics in gauging ICT progress, and realized that these metrics themselves need time to mature. For example, moving 200 schools under the e-education umbrella is a sizeable challenge. To that end, six pilot schools were first selected, and their readiness is now starting to be measured, using an e-maturity model. That way, it becomes easier to find out where they stand in the implementation process.

Open to learning
Qatar has been mindful of its status as a small, open economy. With an open mind, its leadership has studied the experience of many other countries in carrying out its ICT transformation. Many of the top echelons of Qatar’s leadership have studied overseas and travel abroad often. The leadership is realizing how IT is transforming countries such as India, Singapore, and China, and how IT can therefore transform Qatar too. The notion that “the world is flat” has influenced Qatari leadership. Lessons from India have been particularly useful, especially the examples of cities such as Bangalore, companies such as Wipro and Infosys, and educational institutions such as the Indian Institute of Technology. The long-term goal is to become a regional center of excellence for information technology and the knowledge economy. As of late, there has been close and intensifying cooperation with Singapore’s InfoComm Development Authority (IDA). At the same time, many of Qatar’s ICT programs have been tailored specifically for Qatar, taking into account the unique national model and circumstances. While looking at best practices from Singapore and Korea, Rep., ictQATAR also realized that these can, at best, be reference points. For detailed planning and implementation, it would have to be creative in designing for the specific needs of Qatar’s local communities.

Conclusion
All these far-reaching benefits will lead to reinforcing Qatar as a progressive nation. Already rich in culture and resources, it is now trying to take full advantage of the most sophisticated and advanced technologies the world has to offer. These technologies will enrich the lives of its citizens through daily delivery of greater knowledge and enhanced social services and the creation of a powerfully-connected and effective community.
For Qatar, the journey has only started. But despite its relatively late start, the country has succeeded in making its mark on the world’s networked readiness map. Crucially, the lessons learned by Qatar since it has embarked on an ICT-driven transformation hold promise for other nations who have recognized the power of ICT to disseminate knowledge, spur development, and strengthen business competitiveness in the 21st century.

What then are some of the important lessons from Qatar’s unfolding story? The biggest by far is that political and national leadership will make a crucial difference to the success or failure of these reforms. It is not that other nations don’t have similar ambitions. It is also not that Qatar has not faced serious challenges in this journey. The difference is that despite challenges, setbacks, roadblocks, and limitations, the country has been able to forge ahead with single-minded devotion, conviction, and courage.

In addition, the country’s ambitious knowledge agenda has been complemented with liberal doses of financial support and infused with the concept of developing a unique Qatari ICT adoption model. The latter has been particularly useful in securing a sense of ownership from the community at large. Despite pockets of resistance to making ICT all-pervading within a short time frame, a wide spectrum of local communities has been successfully engaged in the transformation project.

ictQATAR is the enthusiastic champion of ICT for the entire country, and has consistently pushed for an integrated and holistic approach to ICT implementation. It has managed to win cooperation and support from other government agencies and departments. It recognized early the importance of setting up pilot projects, testing and measuring their effectiveness, and from there proceeding to enlarge their scope.

A willingness to make mid-course corrections, along with widespread awareness campaigns, the national economy’s global aspirations, and the recognition of the crucial role of education have all added momentum to the process of making ICT a part of the national agenda.

This has been Qatar’s recent approach, and it has contributed in no small way in making the nation move forward. With all this and a can-do spirit, the small nation of Qatar has been able to make a big mark in ICT implementation and development and be a model for other countries in the region and around the world.

Notes

1 The ERU framework is inspired by the Networked Readiness Framework featured in the Report.

2 The integration of sector-specific agenda-setters and power-brokers will be especially important in this context.