

Executive Summary

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The *Global Information Technology Report* series celebrates its 10th anniversary this year. The series has followed and tried to cast light on the evolution of information and communication technologies (ICT) over the last decade, as well as raising awareness about the importance of ICT diffusion and leveraging for increased development, growth, and better living conditions. The methodological framework of the Networked Readiness Index (NRI) has mapped out the enabling factors driving networked readiness, which is the capacity of countries to fully benefit from new technologies in their competitiveness strategies and their citizens' daily lives. The Index has allowed private and public stakeholders to monitor progress for an ever-increasing number of economies

all over the globe, as well as to identify competitive strengths and weaknesses in national networked readiness landscapes. In doing so, the NRI and the series have grown into a unique policy tool in the discussion and design of national strategies to increase networked readiness and overall competitiveness.

As ICT continues to drive innovation, productivity, and efficiency gains across industries as well as to improve citizens' daily lives, *The Global Information Technology Report 2010–2011* takes a forward look on occasion of the 10th anniversary of its publication. Rather than focusing on the major economic, political, and social transformations enabled by ICT over recent years, the *Report* tries to imagine the new wave of transformations—*transformations 2.0*. Collecting the insights of practitioners, academics, and industry experts, the *Report* explores the ways in which ICT will further revolutionize the way social stakeholders work, interact, and conduct their lives, businesses, and transactions. ICT has shown its revolutionary power as a key catalyst for change, modernization, and innovation and one can safely predict this trend will only accelerate going forward. As in past editions, the *Report* highlights a number of best practices in ICT readiness and usage in order to showcase strategies and policies that have proven particularly successful in some specific country or region, and that could be a source of inspiration for relevant stakeholders around the world.

The *Report* series is the result of a long-standing partnership between the World Economic Forum (the Forum) and INSEAD, aimed at identifying the drivers of national capacity to leverage ICT advances. The

Report is composed of four thematic parts. Part 1 relates the findings of the Networked Readiness Index 2010–2011 (NRI) and features selected expert contributions on the general theme of transformations 2.0. Part 2 includes a number of case studies showcasing best practices in networked readiness in Costa Rica, Saudi Arabia, the United States, and the European Union. Part 3 comprises detailed profiles for the 138 economies covered in this year's *Report*, providing a thorough picture of each economy's current networked readiness landscape and allowing for international and historical comparisons on specific variables or components of the NRI. Part 4 includes data tables for each of the 71 variables composing the NRI this year, with rankings for the economies covered as well as technical notes and sources for the quantitative variables used.

Part 1: The Current Networked Readiness of the World and ICT-Enabled Transformations 2.0

Part 1 presents the latest findings of the NRI, offering a comprehensive assessment of the present state of networked readiness in the world. Moreover, a number of expert contributions focusing on the coming transformations, enabled and driven by ICT, are included. These relate to (1) the emerging Internet economy, (2) communities to be built around digital highways, (3) the promise of technology, (4) ICT's growing impact on poverty reduction, (5) ICT's contribution to meeting the decade's challenges, (6) localization 2.0, (7) ICT for an effective social strategy, (8) the creation of a fiber future and its regulatory challenge, and (9) mobile banking in the emerging world.

Insight from the NRI 2010–2011 on the world's networked readiness

Chapter 1.1, "The Networked Readiness Index 2010–2011: Celebrating 10 Years of Assessing Networked Readiness," presents the latest findings of the Index, putting them into a regional and income-group context while also looking at the across-years trends in networked readiness.

The current networked readiness framework and resulting NRI were developed by INSEAD in 2002 as part of an ongoing joint research project with the Forum, and is the main methodological tool used in the *Report* to assess the extent to which a record number of 138

economies around the world leverage ICT advances for increased competitiveness and development. The framework gauges:

- the conduciveness of national environments for ICT development and diffusion, including the broad business climate, some regulatory aspects, and the human and hard infrastructure needed for ICT;
- the degree of preparation for and interest in using ICT by the three main national stakeholders in a society (i.e., individuals, the business sector, and the government) in their daily activities and operations; and
- the actual use of ICT by the above three stakeholders.

Although the networked readiness framework has been kept stable since 2002, with some modification in the nature and number of variables, a process of revision was begun last year to better capture recent trends and evolutions in the ICT sector. The chapter provides some information on recent and expected future developments. As in previous years, the NRI is composed of a mixture of quantitative data collected by international organizations—such as the International Telecommunication Union (ITU), the United Nations, and the World Bank—and survey data from the Executive Opinion Survey (Survey), conducted annually by the Forum in each of the economies covered by the *Report*. The NRI 2010–2011 covers a record number of 138 economies from both the developed and developing world, accounting for over 98 percent of world GDP.

Sweden tops the 2010–11 rankings for the second time in a row, with an outstanding performance across the board. Although some Nordic countries lost some ground with respect to last year, the others are still among the most successful countries in the world at fully integrating new technologies in their competitiveness strategies and using them as a crucial lever for long-term growth. Finland, Denmark, Norway, and Iceland rank among the top 20, at 3rd, 7th, 9th, and 16th, respectively.

Singapore is stable at 2nd, leading Asia and the world in networked readiness, followed by Finland (up three places from last year), Switzerland, and the United States.

Europe continues to display remarkable levels of ICT readiness, with 11 regional economies featuring among the top 20 of the world's best performers. Besides the Nordics and Switzerland, the Netherlands (11th), Germany (13th), Luxembourg (14th), the United Kingdom (15th), and France (20th) rank among the most networked economies worldwide.

Asia is home to some of the best performers in the world in the NRI rankings and to the countries that have proven the most dynamic over time. In particular,

six economies besides Singapore feature among the top 20, namely Taiwan (6th), Korea (10th), Hong Kong (12th), Australia (17th), New Zealand (18th), and Japan (19th). With regard to the largest Asian emerging markets, China consolidates its position at 36th after years of impressive progression in the rankings, while India loses some ground and is down five places at 48th.

Although a number of countries in Latin America and the Caribbean region post notable improvements or consolidate their achievements in networked readiness, the region as a whole continues to trail behind international best practices in leveraging ICT advances. No Latin American or Caribbean economy appears in the top 20 and only a handful feature in the top 50: Barbados (38th), Chile (39th), Puerto Rico (43rd), Uruguay (45th), and Costa Rica (46th). While Brazil climbs five places to 56th, Mexico is stable at 78th, and Argentina drops five places to 96th.

The assessment of sub-Saharan Africa's networked readiness continues to be disappointing, with the majority of the region lagging in the bottom half of the NRI rankings, bar Mauritius (45th) and South Africa (61st). Tunisia consolidates its leadership in North Africa at 35th place, while all other countries in the region, with the exception of Morocco (83rd, 5 places up), follow a downward trend. The biggest decline is that of Libya, which drops a staggering 23 places to 126th. Egypt (75th) and Algeria (117th) lose 4 places each, although both improve in score. On a more positive note, the Middle East continues to feature prominently in the rankings, with four countries in the top 30, namely Israel (22nd), the United Arab Emirates (24th), Qatar (25th), and Bahrain (30th).

An analysis of country and regional trends in networked readiness using a five-year time series and an overview on future dissemination efforts and the impact of the *Report* are also included in the chapter.

The emerging Internet economy going into the future

The next decade will see the global Internet transformed from an arena dominated by advanced countries, their businesses, and citizens to one where emerging economies will become predominant. As more citizens in these economies go online and connectivity levels approach those of advanced markets, the global shares of Internet activity and transactions will increasingly shift toward the former. In addition, with the improvement in the speed and quality of broadband and with Web 2.0 technologies and applications, economic and social dynamics across the world will change dramatically, with massive implications in terms of productivity gains and new opportunities for individuals. This inflection point presents an opportunity for economies—and cities—all over the globe to take decisive steps to gain the competitive advantage that can be derived from widespread use of broadband networks.

In their chapter “The Emerging Internet Economy: Looking a Decade Ahead,” authors Enrique Rueda-Sabater and John Garrity (both at Cisco Systems) illustrate this transformation through the dynamics of the global Internet economy—the factors behind which are faster growth in emerging countries, rapid expansion of their consumer class, and developments in wireless technology—and take a look at the paths of Internet connectivity that different countries have followed. They found that two major factors especially impact the spread of Internet: the availability of personal computers (PCs), and the density of preexisting fixed telephone lines and cable. On this basis, a country classification from a connectivity perspective is proposed, as follows: first adopters, converging adopters, and belated adopters. Through this analysis and classification, the authors seek to gain insights into the likely dynamics—and the options countries face—as Internet use becomes more intensive (through faster and higher-quality broadband) and more widespread (as networks, both fixed and wireless, connect more and more people around the world). For converging adopters, the challenge appears to be accelerating the speed of adoption and reducing the lag between widespread Internet penetration and broadband penetration. For belated adopters, it is shifting gears to leapfrog to faster Internet and broadband adoption. The authors believe the answer in both cases points toward the implementation of a comprehensive strategy combining investments in broadband infrastructure and skills concomitantly with improving the policy and regulatory frameworks that affect the adoption of network technology.

Building communities around digital highways

Recognizing the crucial role played by digital highways (defined as nationwide high-speed broadband enabled by a combination of fixed as well as wireless networks) in fostering socioeconomic development, governments around the world are spending billions and setting ambitious targets to foster their growth. Just as actual highways connect people and foster social and commercial activity, digital highways can facilitate the creation of virtual communities in vital areas. When policymakers and telecommunications operators collaborate with leaders in other sectors, such as health and education, they are laying the groundwork for profound improvements—boosting national competitiveness, innovation, economic productivity, and social inclusion.

In Chapter 1.3, “Building Communities around Digital Highways,” Karim Sabbagh, Roman Friedrich, Bahjat El-Darwiche, and Milind Singh (all at Booz & Company) delve into the rationale for digital highways and assess their current development status in order to determine the actions required from policymakers, networked operators, and other relevant stakeholders to facilitate broadband deployment and the opportunities ahead. The authors remark that accelerating the

deployment of digital highways and deriving full benefits from this is not a simple task. It requires fundamental changes in vision and action throughout the entire broadband ecosystem. They believe policymakers and network operators first must look beyond broadband networks alone and facilitate the development of a host of related services and applications, then actively encourage citizens to use them. The authors also claim there is a strong need for collaboration among other sector participants such as device manufacturers, applications developers, and counterparts in adjoining sectors. Finally, the members of the broadband ecosystem must work with their counterparts in adjacent industries—such as health, energy, education, and transportation—to develop the applications that will help those sectors to reap broadband’s benefits. Only when all of these stakeholders are fully engaged can digital highways reach their full potential and facilitate efficiency, competitiveness, and prosperity in the communities they serve. The future of digital highways rests on a collaborative, committed, and capable ecosystem, which not only delivers high-speed broadband but also builds vibrant communities around it. The authors strongly believe that communities facilitating stakeholders’ innovation, adoption, and collaboration will realize the extraordinary potential of broadband.

The promise of technology

The pace of change and technological evolution has accelerated greatly over the last decades, with unequivocally positive transformations for societies, companies, and individuals. It is remarkable not only how dramatically the technologies in everyday use have changed, but also how easily society as a whole has adopted these innovations. ICT has provided the foundation for the huge leaps that we have witnessed in the last few decades. Its impact can be grouped into at least three distinct categories: economic, business, and social. The three are interrelated, in the sense that what happens in each is both cause and consequence of what happens in the others.

In his chapter “The Promise of Technology,” César Alierta from Telefónica provides a thoughtful overview of the most recent technological advances, notably those enabled by ICT, and points to some of the possibilities for future evolution. Areas addressed in the chapter include ICT’s impact on productivity and competitiveness, business management, companies’ size, knowledge of the market and networks, and relations between governments and citizens, among others. The chapter’s review leads to the inescapable conclusion that we almost certainly have much yet to discover. In light of the transformations we have already experienced, the author concludes it is improbable that the next decades will not see further significant discoveries or, for that matter, that the innovation dynamic in ICT will substantially diminish. Indeed, the current pipeline is already full and promising, and constantly being

refilled. The idea, however—Alierta says—is not to seek innovation for innovation’s sake. Technology has profoundly and positively reshaped the world in which we live—for individuals and for whole societies, changing our lives for the better.

ICT’s growing impact on poverty reduction

During the past few years, a growing number of poor people have benefited from improved access to interactive communication. The rapid uptake of mobile telephones even in remote locations of low-income countries, together with the emergence of many innovative mobile applications and services, has radically increased the potential for ICT to play a constructive role in the fight against poverty. At the same time, the role of the poor in this context is transforming, increasingly shifting from one of passive consumption of ICT toward one of active use and participation in the production of ICT goods and services, thus giving greater importance to ICT in development and poverty reduction strategies. Enterprises have a crucial role in this endeavor, especially small and micro ones, which see the greatest involvement of the poor. They can help reduce poverty in two main ways: through direct income generation, and through diversified and more secure employment opportunities.

xii Chapter 1.5, “The Growing Possibilities of Information and Communication Technologies for Reducing Poverty” by Torbjörn Fredriksson (UNCTAD), highlights some innovative applications that can make a tangible difference and improve living standards of the urban and rural poor, with a particular focus on the role of enterprises. Two ways in which ICT in enterprises can benefit the poor are considered: the first by using ICT in enterprises of direct relevance to farmers, fishermen, and other micro enterprises in low-income countries; the second occurs when the poor are directly involved in the sector and are employed producing ICT goods and services. The author advocates for a holistic poverty-focused approach to ICT and enterprise in order to seize the many opportunities that are appearing as well as to address potential pitfalls. He believes a poverty-focused approach to ICT and enterprise must aim to identify and facilitate economic growth in ways that are socially inclusive. Policymakers need to support ICT adoption and use at lower levels of economic activity and sophistication, including subsistence-based enterprises. To this end, a first step should be for governments and development partners to ensure the further expansion of mobile coverage to those areas not yet covered by a mobile signal and adequate levels of competition, as well as to enhance access to broadband technologies. In addition, mobile and other ICT services need to be made affordable to the poor through an array of measures, including a long period of prepaid validity, per-second charging, nationwide tariffs, and commercialization of used handsets for mobile

telephony as well as ways of addressing the lack of electricity, for example. At the same time, the author calls for governments and development partners to work with the private sector—the primary source of infrastructure investment and service innovation—if they want to fully realize the promise of ICT for poverty reduction. Successful projects aimed at enhancing the productive use of ICT by enterprises have often seen the involvement of multiple stakeholders acting in partnerships.

Meeting the decade’s challenges

No one would argue that both business and society at large face daunting challenges over the next decade. To take just one example from business, many companies are counting on emerging markets as the primary source of their revenue growth in coming years—forgetting that for the foreseeable future, products in those markets will sell at a fraction of their developed-economy prices. Such business challenges will play out against the backdrop of monumental societal issues, including how to deliver basic education and healthcare to billions of people who lack them today. Transformational ICT will play a central role in solving many of the challenges we face. For starters, the spread of ICT throughout the developing world—continuing the trend documented in this and previous *Global Information Technology Reports*—will make it easier to distribute fundamental services, such as education and healthcare, more broadly. At the same time, technology innovations in areas such as mobile and cloud computing will spawn solutions to specific business problems.

But in Chapter 1.6, “Meeting the Decade’s Challenges: Technology (Alone) Is Not the Answer,” Vineet Nayar (at HCL Technologies) points out that even the most transformational technology offers little value on its own. Sparking ICT innovation and enabling the implementation of new technologies require the human catalyst of an engaged and empowered team of people. The author argues that because ICT innovation and implementation typically involve people in organizations—whether business, nonprofit, or governmental—we need to reinvent the traditional hierarchical organization if we are to realize ICT’s tremendous potential. Drawing on HCL’s experience of organizational reinvention, the chapter presents a number of lessons for organizations aiming to foster transformational ICT by transforming themselves, as follows:

1. Recognize one’s “value zone,” the place where frontline employees interact with the people of one’s customers or other stakeholders and where innovation, and implementation of innovations, typically occurs.

2. Create trust through transparency, so that people care enough about their organization to seek and seize opportunities to generate innovative and value-creating solutions.
3. Invert the organizational pyramid, as an acknowledgment that frontline employees are the ones typically creating value for their organization and stakeholders—and to empower those employees to do that.
4. Nurture new leaders and new kinds of leaders, often younger employees who eschew hierarchy and thrive in the collaborative environment required to solve today's problems.

Only if one is able to reinvent one's organizations in this fashion, the author argues, will ICT be effectively put to work meeting tomorrow's challenges.

Localization 2.0

When it comes to adapting their products and services to the needs of customers in different countries, companies that supply ICT products and services have so far focused on the basics—changing the languages their products and services work in, the character sets they use, and so on. It is an approach that worked well in the past. Developed countries dominated the consumption of ICT products and services, the *lingua franca* of multinational corporations was predominantly English, and the business practices organizations used tended to be those that had evolved in the West. But the world is changing fast. Changes in the balance of global trade have been underway for some time, but have gathered pace since the recession hit the United States, Europe, and other developed economies in 2008. While the balance has shifted, Chinese manufacturers, Indian software companies, and the other powerhouses of developing economies have expanded globally, either by establishing operations of their own in other countries or by buying established businesses. The language of global commerce may still be English and the business practices used still those of the West, but for how long? In parallel, ICT products and services have penetrated much more deeply and extensively through populations all over the world. In particular, they have now spread beyond early adopters and others prepared to adapt their ways to the technologies on offer to a mass market of users that (not unreasonably) expects technologies to adapt to them, not the other way around. Together, these trends create the need for much greater levels of localization than have been acceptable in the past. While localization 1.0 focused on adapting ICT products and services to operate in different languages and use different character sets, localization 2.0 will align them more broadly with the laws, cultures, and customs of the countries in which they are sold. Chapter 1.7, "Localization 2.0" by Jeff Kelly and Neil Blakesley (both at BT), explores the

dimensions of the localization challenges that lie ahead and considers what can be done to address them.

ICT for an effective social strategy

In his chapter "Transformation 2.0 for an Effective Social Strategy," Mikael Hagström (at SAS) notes that the global economic crisis has undermined our confidence in many of the organizations to which we traditionally turn for leadership, support, and assistance, notably governments. Pulled in several directions at once, these are hard pressed to mount effective responses to their many urgent challenges—including high levels of unemployment, increased need for public services, aging populations, rising budget deficits, falling tax revenues, and political divisiveness. Visionary leaders and thinkers are required to actively promote innovation and transformation as essential components of comprehensive solutions. The author provides a review of the many government and public-sector agencies around the world that fall into this forward-looking category, together with some inspirational examples of ICT usage in this sense. He also touches on the history of analytic decision making and discusses its evolution in the public sector. Last but not least, the author envisages a future where data-driven decision making can play a role in transforming governments and societies, with the goal of inspiring readers and proactively working to leverage analytics as the doorstep to the digital age. Going forward, there is an opportunity to reinvent government by intensifying its interaction with civil society, but government leaders need to ask themselves some fundamental questions about how they collect, analyze, and exploit data in this new world. We are only just beginning to realize the transformative potential of analytics in enabling social and economic innovation. Although analytics is not a panacea, the author strongly believes it is part of the solution. At a time of diminished resources, heightened expectations, and a seemingly inexhaustible supply of data, analytics can help us make the best of the information we have.

The creation of a fiber future and the regulatory challenge

Policymakers want a regulatory framework that stimulates competition in the telecommunications industry while maintaining individual players' incentives to invest in network and service improvements. Industry regulators aim for a regulatory balance between competition and investment that maximizes consumer and social benefits. But as technologies and investment costs change, that point of balance moves. Chapter 1.9, "Creating a Fiber Future: The Regulatory Challenge" by Scott Beardsley, Luis Enriquez, Mehmet Güvendi, and Sergio Sandoval (all at McKinsey & Company Inc.), examines the case of fiber networks and investment costs. Fiber networks provide higher broadband speeds and potentially broadband services with far greater economic, consumer, and social benefits, yet they are

hugely expensive to build and will be difficult to afford on a nationwide scale without some kind of regulatory concessions or subsidies from government. The chapter explores the pressures on operators to build fiber networks and the related economic and regulatory obstacles standing in their way. It also shares best practices from the regulatory strategies and measures to overcome those obstacles put in place by those countries/regions with widespread fiber networks (namely the United States, Japan, and the European Union). The authors conclude that it is too soon to say whether the new regulatory approaches offer sufficient incentives and certainty to operators to stimulate the large-scale investments in fiber networks needed, but it is certainly a start in that direction. They think that “business as usual” will not work and that more innovative ways of collaborating among local and national governments, operators, and regulators will be required. Broadly, governments can act to spur demand for high-speed broadband among citizens, provide investment support for industry players, and—perhaps most important of all—put forth a compelling vision of the economic benefits of a “high fiber” future. Regulators need to find the right ways, within their economies, to balance the need for competition against the creation of an investment-friendly environment. This may require a re-examination of their current approach to regulation.

Mobile banking in the emerging world

When residents of the Maldives lost their savings in the tsunami of 1994, it was not because they had sunk them into assets later destroyed in the flood. Instead, the losses involved cash: funds Maldivians had stuffed into mattresses because they lacked access to banks. When the tsunami hit, people’s life savings were literally washed away. In his chapter “The Emerging World’s Five Most Crucial Words: ‘To Move Money, Press Pound,’” Ram Menon (at TIBCO Software Inc.) makes the case for extending the reach of financial services worldwide, considering that some 2.7 billion people lack access to banking according to the World Bank’s estimates. He analyzes the cases of Kenya and South Africa: although Kenya is the financial hub of East and Central Africa, at least a third of its population remains beyond banking’s reach. Some do not qualify for accounts. Others—the literacy-challenged, for example—rarely want them. Even in South Africa—a middle-income nation with a strong financial system—only 60 percent of adults use a bank. But a mobile phone is a different story. Nearly 95 percent of all South African adults own a mobile phone, a group that includes many who are unbanked. The author believes mobile phones have the potential to democratize access to financial services. In the developing world, no instrument is of greater value. Over 1.5 billion mobile phones are currently in use across the emerging world—a number likely to reach 2.5 billion by 2015, as developing nations drive over 80 percent of

all new subscriptions worldwide. The mobile phone has become the Trojan horse for change in the emerging world: it is inexpensive, personal, connected, and ubiquitous. Here, a handset offers more than voice and text and music and gaming. It offers sustenance: mobile agricultural advice, healthcare support, and money transfer. The latter is especially compelling. Mobile telephony has spawned mobile money, turning small, local merchants into the equivalent of bank branches. In bringing banking services to those who have never seen the inside of a bank, it creates a stepping stone to formal financial services for billions of people with no accounts, credit, or insurance. The author argues that mobile telephony is generating a financial sea change across the emerging world and explores its first waves in this chapter.

Part 2: Best Practices in Networked Readiness: Selected Case Studies

Part 2 presents deep-dive studies on selected national or regional experiences in leveraging ICT or developing the sector, showcasing best practices and policies implemented in Costa Rica, Saudi Arabia, the United States, and the European Union.

Costa Rica’s development story and the ICT sector

Costa Rica represents an interesting case study for countries looking to design national strategies to develop the ICT sector as a driver for long-term growth and competitiveness. Indeed, the country is notable among the economies of its kind for the success obtained in this respect, as also evidenced by the country’s good performance in a number of different international assessments of aspects related to ICT. Three major public policies have fostered the rapid and sustainable growth of the ICT sector in the country, including continuous public investment in education, the reduction of internal taxes and trade barriers to technological products, and solid foreign trade and foreign direct investment (FDI) platforms.

Chapter 2.1, “Costa Rica’s Efforts Toward an Innovation-Driven Economy: The Role of the ICT Sector” by Vilma Villalobos (Microsoft) and Ricardo Monge-González (Presidential Council on Competitiveness and Innovation of Costa Rica), provides an overview of the ICT sector in Costa Rica, its progress over time, and its contribution to the national economy. It also explores ICT’s role in the national strategy to transform the country into an innovation-driven economy, the success factors for its rapid and sustainable growth, the current challenges, and the agenda addressed by the Presidential Council on Competitiveness and Innovation. Instrumental to the sector’s development were ICT-friendly public policies implemented since the 1980s, including investment in human capital to create a pool of healthy and qualified laborers, foreign trade liberalization, export promotion

and FDI attraction, and early pioneer measures to facilitate the population's access to informatics (including the creation of the National Program of Educational Informatics and reduction of internal taxes and trade barriers on technological products). All these, together with the country's political stability, favorable business climate, and central geographical location, were crucial elements in attracting FDI, with consequent important knowledge spillovers and technology transfer to the domestic sector. Going forward, the challenge is to adopt a structured and coordinated strategy across government bodies to address pending shortcomings. The chapter concludes by examining the key role of the newly created Presidential Council on Competitiveness and Innovation in this regard, together with its strategy and the progress it has realized since its creation in 2010.

YESSER and effective e-government in Saudi Arabia

In Chapter 2.2, "Growing Talent for the Knowledge Economy: The Experience of Saudi Arabia," authors Mustafa M. Khan and Mark O. Badger (both at YESSER) and Bruno Lanvin (INSEAD, eLab) relate Saudi Arabia's journey into the e-government race and toward the creation of an information and knowledge-based society. This journey involved building advanced infrastructures, deploying effective governance mechanisms, and incorporating the practices of continuous improvement by addressing the human factor—often the most challenging part of any e-government transformation—into its actions and future direction. The authors focus notably on YESSER, the National e-Government Program, launched to provide better government services and enhance efficiency and effectiveness in the public sector, as well as to build the basis for a Saudi information and knowledge-based society. Simultaneously, a large number of regulatory and policy actions aimed at fostering competitiveness and establishing a business environment supportive to ICT were adopted. In its first five years of operation, YESSER achieved progress on two important fronts: implementing robust shared services that ensure secure government information flows and the delivery of secure online services, and providing organizational infrastructure to help government agencies successfully develop and implement their e-Government Transformation Plans—the transformation of traditional services to online ones, with the consequent benefits in terms of convenience, timeliness, and lower costs. The Saudi National e-Government Program is entering its second five-year phase this year, with a renewed focus on creating a skilled workforce. The development of Saudi human capital is at the center of the next five-year plan as the country continues to advance toward the next generation of a technology-enabled government and knowledge society. The authors believe that the role and experience of YESSER has been remarkable. By considering and promoting e-government—not just as a set of measures to bring

more public services online, but as a transformation tool to improve the relationship among government, business, and citizens—it had to develop specific human resources policies and design innovative ways to attract and retain talent within its own team. Today, the experience gathered by Saudi Arabia in this area can be a source of inspiration not only for other parts of the government, but also for other countries around the world. Combining this experience with the latest advances made in other contexts (in the areas of curricula, global knowledge economy skills, and skills for innovation, for example) represents yet another potential source for huge benefits to Saudi economy and society.

The broadband strategy in the United States

In early 2009, the US Congress directed the US Federal Communications Commission (FCC) to develop a plan to ensure that every American has "access to broadband capability." That planning exercise resulted in *Connecting America: The National Broadband Plan* (NBP) issued in March 2010. The NBP highlighted in particular the idea that broadband is not an end, but rather a tool for furthering national objectives, including improving education, healthcare, energy efficiency, public safety, and the delivery of public services. As such, four main ways are identified by which the government can influence the development of broadband, as follows: (1) ensuring robust competition; (2) efficiently allocating assets that the public sector controls or influences (such as spectrum and public infrastructure); (3) encouraging the deployment, adoption, and use of broadband in areas where the market alone is not enough (such as those where the cost of deployment is too high to earn a return on private capital or where households cannot afford to connect); and (4) providing firms and consumers with incentives to extract value from the use of broadband, particularly in sectors such as education and healthcare, among others.

In Chapter 2.3, "A National Plan for Broadband in the United States," authors Jonathan B. Baker and Paul de Sa (both at the FCC) provide a comprehensive overview of some of the NBP's most important themes. Among these are the need to ensure robust competition and an efficient allocation of spectrum and infrastructure controlled by the public sector, as well as the need to encourage broadband deployment, adoption, and usage and to use broadband to further national purposes (i.e., consumer welfare, civic participation, public safety and homeland security, community development, healthcare delivery, energy independence and efficiency, education, worker training, private-sector investment, entrepreneurial activity, job creation, and economic growth, among other areas). The authors highlight that, one year after the NBP's release, most of its recommendations are in the process of being implemented, although it is evolving continuously and so reflecting new realities and leveraging unforeseen opportunities. They, together with

the authors of the NBP, believe full implementation will need a long-term commitment to measure progress and adjust programs and policies in order to improve performance.

The challenge of high speed in the European Union

In Chapter 2.4, “Broadband Developments in Europe: The Challenge of High Speed,” Lucilla Sioli (European Commission) describes broadband developments undergone by the European Union over the recent years. Indeed, the region has experienced extraordinary growth in broadband roll-out and uptake in the last decade. More than 60 percent of households and 90 percent of enterprises are connected to broadband, enjoying the Internet experience. The European broadband market has developed into the largest in the world, with 128.3 million lines. Some European Member States also currently top the ranks in terms of penetration rates worldwide. The fixed broadband penetration rate in the European Union as a whole was 25.6 percent in July 2010 and continued to grow. Despite these good results, fostered also by a favorable regulatory environment, recently up-take has been slow and deployment of next-generation access is only beginning. The *Digital Agenda for Europe* (the European strategy for a flourishing digital economy) as well as *Europe 2020* (the European growth strategy for the next decade) set ambitious high-speed targets to make a quantum leap to equip the European Union with the 21st-century infrastructure it needs, calling for the development of a comprehensive policy based on a mix of technologies, focusing on two things: the achievement of universal broadband coverage (with Internet speeds gradually increasing to 30 Mb/s and above) and fostering the deployment and up-take of next-generation access networks, allowing connections above 100 Mb/s by 2020. This chapter intends to frame the current political debate and broadband policy in the European Union in its own context, which is often different from those of other economies. In doing so, the author highlights the challenges going forward, such as migrating toward higher speeds; the uncertainty of business models, which is currently keeping investment back; and some new practices that are being tested in a number of countries. The author also analyzes the ongoing political debate and notes that in 2010 the EU Commission published a broadband Communication that laid out a common framework for actions at EU and Member State levels. These included the strengthening of the regulatory framework through a Next Generation Access recommendation, the proposal of a European Spectrum Policy Programme, the rationalization of the funding instruments, and the definition of national targets through comprehensive broadband plans. Developments will be monitored through the Digital Agenda Scoreboard, to be published in June 2011.

Parts 3 and 4: Country/Economy Profiles and Data Presentation

Parts 3 and 4 feature comprehensive profiles for each of the 138 economies covered this year in the *Report* and data tables for each of the 71 variables composing the NRI, with global rankings. Each part begins with a description of how to interpret the data provided.

Technical notes and sources, included at the end of Part 4, provide additional insight and information on the definitions and sources of the specific quantitative non-Survey data variables included in the NRI computation this year.