

IT Korea: Past, Present, and Future

JAE KYU LEE, Korea Advanced Institute of Science and Technology

CHOONMO AHN, Electronics and Telecommunications

Research Institute, Korea

KIHOON SUNG, Electronics and Telecommunications

Research Institute, Korea

Half a century after the Korean War, Korea, Rep. (Korea) has become one of the leading information technology (IT) nations of the 21st century. Korea has achieved rapid economic growth by focusing on the electronics industry. It has grown to be an economic power by revitalizing the IT industry, whose remarkable leadership began at the turn of the 21st century. Many have analyzed the reasons for Korea's amazing economic growth, looking at its proactive acceptance of technology, value-added development with enhanced performance, and quick transition through industrial structuring. Now Korea is facing the financial crisis that is currently sweeping the world, along with a slowdown in the growth of the IT industry, so the proactive development of new IT-enabled growth engines is essential.

This chapter provides an account of the four development phases of the history of the Korean IT industry and the progress of related policies. We start by reviewing the first phase (which lasted until 1980), looking at how Korea has achieved economic growth on the basis of the electronics industry. We then describe the second phase (early 1980–90) and consider how the electronics industry evolved into the IT industry and the third phase (early 1990–2000), looking at the growth and consolidation of IT in Korea. Next, we focus on the fourth phase, in which Korea's global IT leadership was established with the IT839 Policy. Finally, we introduce Korea's vision of the New IT Initiative, which seeks a new momentum for the future of the industry as an engine of economic growth.

Phase I: The electronics industry in its infancy

As early as the 1920s, Korea operated telecommunications networks that included the wired telephone line that connected Seoul and Incheon; it had also launched the first radio broadcasting station, Gyeongseong Station. During the Korean War, which broke out in 1950, most of the country's industrial infrastructure was destroyed and Korea's electronics industry was left paralyzed. Forty-three percent of its industrial facilities and 41 percent of its power-generating facilities were ruined. About half of the nation's mining facilities, which provided most of the energy at that time, were also destroyed. The power shortages were the biggest hardship for Korea in those days. The power supply dropped to just 20 percent of its pre-war level immediately after the war, making it impossible to produce home appliances in the domestic market. The power shortage continued until the Korea Electric Power Corporation was established in 1961.

We are grateful to Dr Moonki Choi, President of the Electronics and Telecommunications Research Institute, and Dr Changhee Hyun, Executive Director at the Electronics and Telecommunications Research Institute, for their support and comments.

Electronics after the Korean War (late 1950s)

The desire to develop vacuum tubes (devices used to modify electric signals, which were crucial for the development of electronic technology), grew when US and Japanese vacuum tube products were introduced to the Korean market. Goldstar (now LG Electronics) started to produce Korea's first radios one year after its establishment in 1959. It was the start of Korea's electronics industry.

As the volume of commercial capital from foreign aid expanded during the process of economic development, conglomerates such as Samsung Electronics, LG Electronics, and Hyundai emerged. The proportion of the manufacturing sector devoted to electronics increased, mainly because of the successful industrialization of these conglomerates during the eight years after the war, when they registered an annual growth rate of 10.8 percent. Electric and telecommunications infrastructure had recovered to its pre-war level by the early 1960s.

The rise of the electronics industry (1960s)

After General Jung Hee Park seized power in 1961, Korea's real economic development took off. The government recognized that the electronics and IT industries were promising and began to actively promote their development. To fulfill its goal of developing the two industries, the government pushed electric power and telephones as the priority infrastructure of the national modernization policy that focused on (1) the construction of the infrastructure industry, (2) the promotion of exports, and (3) the renovation of state-managed businesses.

At that time, Korea's electric power and telecommunications industries were promoted by the Electric Power Bureau within the Ministry of Commerce and the Electric Power and the Telecommunication Bureau within the Ministry of Postal Services, respectively. The former led the electronics industry by introducing several regulations, such as the Electricity Business Act, while the latter attempted to create demand for telecommunications services.

The government announced its first Five-Year Economic Development Plan in February 1962. A notable aspect of this plan is the measure that increased foreign capital inflows. The government allowed an unlimited inflow of foreign capital to promote the electronics industry and opened the way for governmental support. To enhance research and development (R&D) capability, the first national research institute, the Korea Institute for Science and Technology (KIST), was established in 1966; this institute performed the role of providing a talent pool to the IT industry. The division of electronics and telecommunications in KIST became an independent institution, the Electronics and Telecommunications Research Institute (ETRI), which laid the foundations for the domestic production of

electronic products. Although the establishment of KIST was based on US assistance in return for sending Korean troops to Vietnam, it consequently helped the advancement of Korea's science and technology. As the fruit of these efforts, LG Electronics introduced Korea's first black-and-white television, the model VD-191, which captured 10 percent of the domestic market only five months after its launch.

The Age of Exports (early 1970s)

Around the beginning of the 1970s, owing to the Act on the Development and Creation of Industrial Complex for Export, enacted in 1964, specialized industrial complexes were established. These included government-owned industrial complexes, free export zones, local government-owned industrial complexes, and civil industrial complexes, all of which contributed to the emergence of the Age of Exports.

Since the adoption of the Act for Promotion of Industry Complex Development in 1973, the development of industrial complexes has matured and the Kumi Industrial Complex and the Masan Free Export Zone have become the Mecca of the electronics industry in Korea. In the 1970s, Korea started to build large industrial complexes across the nation. The Korea Electronics Export Association, established in 1970, contributed to building up a single export channel of electronic products, exploring the overseas market more aggressively. Owing to the efforts made by the industry and government, the value of electronics exports increased from a mere US\$50,000 in 1962 to US\$1 billion in 1976.

On a related note, the Korea Advanced Institute of Science and Technology (KAIST) was created in 1973 to become one of the world's leading research universities. Over the years, KAIST has supplied quality Masters and PhD graduates who have become the foundational human resources for the sustainable growth of IT technology and industry.

Oil shocks and the development of the electronic switching system (late 1970s)

After the first oil crisis in 1973, the Korean electronics industry began to focus on the development of promising products with large growth potential. In 1976, the Korea International Trade Association commissioned Arthur D. Little (ADL), a consultancy, to do a study on the long-term outlook of Korea's electronics industry. ADL suggested focusing on 24 items, including the color TV, video cassette recorder (VCR), Private Branch eXchanger (PBX), and computer and peripheral devices. The move toward manufacturing these promising items was made on the basis of this report.

The first color TV was successfully developed in 1974; exports reached 110,000 units in 1977. Three manufacturers (Korea National, Samsung Electronics, and LG Electronics), who were already producing home appliances, were ready to produce color TVs. These

companies began to compete for their mass production, thus cultivating the capability of quality enhancement.

After the successful development of the color TV, national attention shifted to the development of the electronic switching system, which was planned by KIST in 1976. Also ETRI was created in 1977. ETRI contracted foreign partners for technical cooperation, and launched the production of the electronic switching system. However, the second oil shock in 1978 caused the export-led electronics industry to face another difficult period of negative growth, as a result of the new protectionism and import regulations imposed by developed countries.

Phase II: The emergence of the IT industry

After its somewhat erratic beginning mentioned above, the electronics industry developed further and consolidated. Also an IT industry truly emerged and began to grow quickly.

The electronics industry's transformation (early 1980s)

The government started color TV broadcasting in December 1980, ushering in the era of this medium. As a variety of sports turned professional in the early 1980s, people came to derive more entertainment from color TV and demand skyrocketed. This spurred the development of other related electronics industries. Color TV made a significant contribution to the domestic production and export of VCRs because it enabled video viewing. Content, including adult movies, was produced in large quantities, and the videotape market grew vibrantly, thus popularizing the VCR.

The IT industry comes into its own (late 1980s)

In the 1980s, Korea's IT industry truly emerged. The Korea Electric and Telecommunications Corporation (current KT) and Korea Data Telecommunication (current LG Dacom Corporation) were established in 1981 and 1982, respectively. ETRI succeeded in the domestic development of the electronic switching system TDX-1 in 1984. By 1987, the number of wired telephones exceeded 10 million; R&D in the telecommunications field progressed greatly after the Seoul Olympics, which were held in 1988. In this period, the local development of personal computers (PCs), which gave strong momentum to the IT industry, really took off. The PC industry—which really got off the ground when Samsung Electronics developed an 8-bit PC, the SPC-1000, in December 1982—saw an enormous growth in production from 1983 to 1988, increasing from 17,000 PC units to 205,000.

After the 1988 Olympics, the happy era of the Age of the Three Lows (low interest rates, low oil prices, and low dollar value) was over, and profitability worsened rapidly amidst the global competition. Thus the electronics industry was forced to change its strategy, moving

from an emphasis on stable growth with low-cost production to high value added creation through high-investment production systems. Korea's position as one of the world's leading IT countries was established in this period, and the electronics industry began to expand its business to incorporate the production of semiconductors and mobile telecommunications.

Phase III: Growth of the IT industry

The next phase of the evolution of the IT industry involved the globalization of enterprises as well as many technological advances.

Initial development (early 1990s)

TDX-10, a time-division switching system that has been called the "pioneer" of Korea's telecommunications industry, was developed by ETRI with purely local technology in 1991. This resulted in an import substitution effect worth 300 billion Korean won (about US\$300 million) earned every year after 1992; the TDX-10 provided the basis for various applied products, such as the pager and code division multiple access (CDMA) products.

The IT industry's growth was closely associated with the spread of telecommunication services. After a long debate, CDMA was adopted over time division multiple access (TDMA) as the general standard. KCS-1, Korea's first prototype of the CDMA system, was produced in 1993 after a contract with US Qualcomm for the joint development of the CDMA digital cellular system; as a result, the world's first CDMA digital mobile phone service was commercialized in 1996.

In the 1990s, Samsung Electronics and LG Electronics, which by then had grown into global conglomerates, became the core of Korea's IT development. Samsung Electronics became the world's leader in the home appliance business in the early 1990s, overwhelming Motorola (which had dominated Korea's mobile phone market for 10 years), and made Anycall a world-famous brand. Developing the world's first 64MB DRAM in 1992, Samsung Electronics also became a global leader in the DRAM semiconductor field. LG Electronics also started investing massively overseas, growing quickly into a global player.

The blossoming of the mobile telecommunications industry (late 1990s)

By passing the Framework Act on Informationalization Promotion and laying out the plans for a high-speed information network in 1995, the Korean government revealed its strong intention of fostering the IT industry. As the mobile telecommunications industry diversified into the personal communication services (PCS), cordless telephone generation 2 (CT-2), and wireless data services in 1997, the number of mobile telecommunications subscribers soared, reaching 22.68 million at the

end of 1997. The increased export of mobile phones led to the expansion of related industries. SK Telecom, KTF, and LG Telcom became important players in mobile services.

With the foreign exchange crisis of November 1997, however, both domestic and overseas markets instantly shrank, causing negative growth. A great number of businesses went bankrupt as a result of the fall in the value of the Korean won and the rise in interest rates. The electronics industry was not immune to this crisis; it experienced a long series of bankruptcies and anticipated difficult times ahead.

The government introduced a number of initiatives—such as those encouraging foreign capital loans, providing elastic tax rates, and offering an extension of trade liberalization measures—to overcome the crisis. The electronics industry underwent restructuring and improved its management system by pushing ahead with big deals in the semiconductor and home appliance markets, two sectors where excessive investment had been made. Fortunately, the IT industry encountered a new boost in the worldwide dot-com boom. The exports of the information and telecommunication technologies (ICT) sector have since increased dramatically. It is widely recognized that the IT industry at this time was the biggest contributor to Korea in terms of overcoming the financial crisis, and that IT products had become Korea's main export after 2000.

Broadband Internet and e-commerce

Broadband has spread enormously in Korea, thereby facilitating massive Internet diffusion. The use of asymmetric digital subscriber lines (ADSL) on the traditional fixed telephone lines outpaced the use of cable modems. The International Telecommunication Union (ITU) ascribed this result partly to demand conditions in Korea. More than 90 percent of Korean households live within 4 kilometers of a local exchange. Most offices and half of the households are in apartment complexes. With short distances from the switching stations, signal decay—which is the main disadvantage of ADSL technology—could be avoided.¹ Since 2001, Korea has been consistently ranked among the countries with the highest broadband penetration.

Through broadband Internet, e-commerce has spread widely. The penetration of electronic marketing is about 15 percent of the retail market, the usage of Internet banking has exceeded the volume of service of branch offices, and Internet stock trading occupies about 60 percent of transactions. The comprehensive cases of e-commerce and e-business developed in Korea are published in the by Lee et al. case collection.² The cases included the global business process (Samsung SDI),³ integration of ERP and eSCM (Volvo Construction Equipment Korea),⁴ supply chain evolution (POSCO),⁵ electronic procurement (iMarketKorea),⁶ customer relationship management (SK Telecom),⁷ knowledge

management (LG CNS),⁸ relationship-based online community (Cyworld.com,⁹ NHN),¹⁰ smart-chip based mobile banking (KB Bank),¹¹ online brokerage (Kiwoom.com),¹² and online auction (Internet Auction Co.).¹³

Phase IV: Global IT leadership

Korea has seen tremendous success in its IT industry, establishing itself as a global player in the international markets. Moreover, this success has had an important impact on the country's economic growth and competitiveness.

The IT industry's contribution to the national economy

By contributing to economic growth and export expansion, the IT industry played an important role in Korea's achieving a per capita income of US\$20,000 and overcoming the financial crisis of the late 1990s. It stabilized the macroeconomic environment through economic growth, job creation, improving the trade balance, and price reductions, as summarized in Table 1.

Table 1: Contribution of the IT industry, 1997–2007

Area	Impact
Economic growth	<ul style="list-style-type: none"> The real value-added of the IT industry grew by 18.2 percent per year on average between 1997 and 2007. The IT industry accounted for 1.7 percent of the 4.4 percent annual average GDP growth between 1997 and 2007. The IT industry accounted for 16.9 percent of real GDP in 2007.
Job creation	<ul style="list-style-type: none"> Jobs in the IT industry increased by 4.2 percent between 1997 and 2006 (the average of all industries was 1.15 percent in the same period). The IT industry accounted for 16.6 percent of jobs created across all industries between 1997 and 2006.
Export	<ul style="list-style-type: none"> The IT industry accounted for 33.5 percent of all exports in 2007. The accumulated surplus by the IT industry during the 1997–July 2007 period was \$329.7 billion.
Price drop	<ul style="list-style-type: none"> The IT consumer price was down by 6.10 percent (3.31 percent up for the entire economy) during the 1997–2007 period. The IT producer price was down by 5.71 percent (2.78 percent up for the entire economy) during the 1997–2007 period.

Source: Korean Information Society Development Institute, 2007.

Table 2: Growth of the IT service fields

Industry	Growth
E-commerce market size	113 trillion Korean won in 2001 516 trillion Korean won in 2007
Internet banking	10.92 million customers in 2001 42.39 million customers in 2007
Online stock trading (%)	857 trillion Korean won in 2001 (46.7 percent of total) 1,388 trillion Korean won in 2006 (54.4 percent of total)

Source: Korean Information Society Development Institute, 2007.

Table 3: Stages of IT policy evolution

Category	IT SERVICE INFRASTRUCTURE				IT MANUFACTURING	
	Cyber Korea 21	e-Korea Vision 2006	Broadband IT Korea 2007	u-Korea	IT 839	u-IT 839
Period	1999-2002	2002-06	2003-07	2006-present	2004-06	2006-present
Characteristics	<ul style="list-style-type: none"> IT industry promotion by building applications Government-led, capital investment centric 				<ul style="list-style-type: none"> Integrate IT industry by associating services, infrastructure and devices with one another 	
Results	<ul style="list-style-type: none"> Built the world's best IT infrastructure Started new services such as DMB and WiBro Created a secure digital environment 				<ul style="list-style-type: none"> Secured globally cutting-edge IT technologies Led international standards: T-DMB as the European standard (July 2005), and WiBro as the ITU 3G standard (October 2007) 	
Limitations	<ul style="list-style-type: none"> IT is mainly used for entertainment and games Insufficient integration with traditional industries that could maximize the benefits of IT Inconsistent policies because of frequent changes of plans 				<ul style="list-style-type: none"> Limited convergence of IT and traditional industries Supply-centered; market demand not fully reflected Poor implementation because of the conflicts between ministries 	

Source: Korean Information Society Development Institute, 2007.

The complementary relationship between the IT device manufacturing industry and the IT service infrastructure resulted in high growth for the industry. IT manufacturing evolved into a world player, with products supported by cutting-edge technology and manufacturing productivity. Thirteen products—including semiconductors, cellular phones, and liquid crystal displays (LCDs)—accounted for more than US\$1 billion in exports in 2007. The IT device field is an exceptional manufacturing sector that has maintained a high growth rate of over 10 percent every year since 2000. The IT service infrastructure was able to maintain a virtuous circle within the IT manufacturing industry owing to the spread of broadcasting and telecommunications services. Some 93 percent of the entire population (43.49 million people) were using mobile phones, and more than 95 percent of households were using high-speed Internet as of 2007. In addition, the percentage of households subscribing to paid channels such as satellite broadcasting had reached 78.6 percent, while the rate of subscription to new services such as digital multimedia broadcasting (DMB) and Internet protocol TV (IPTV) was increasing steadily.

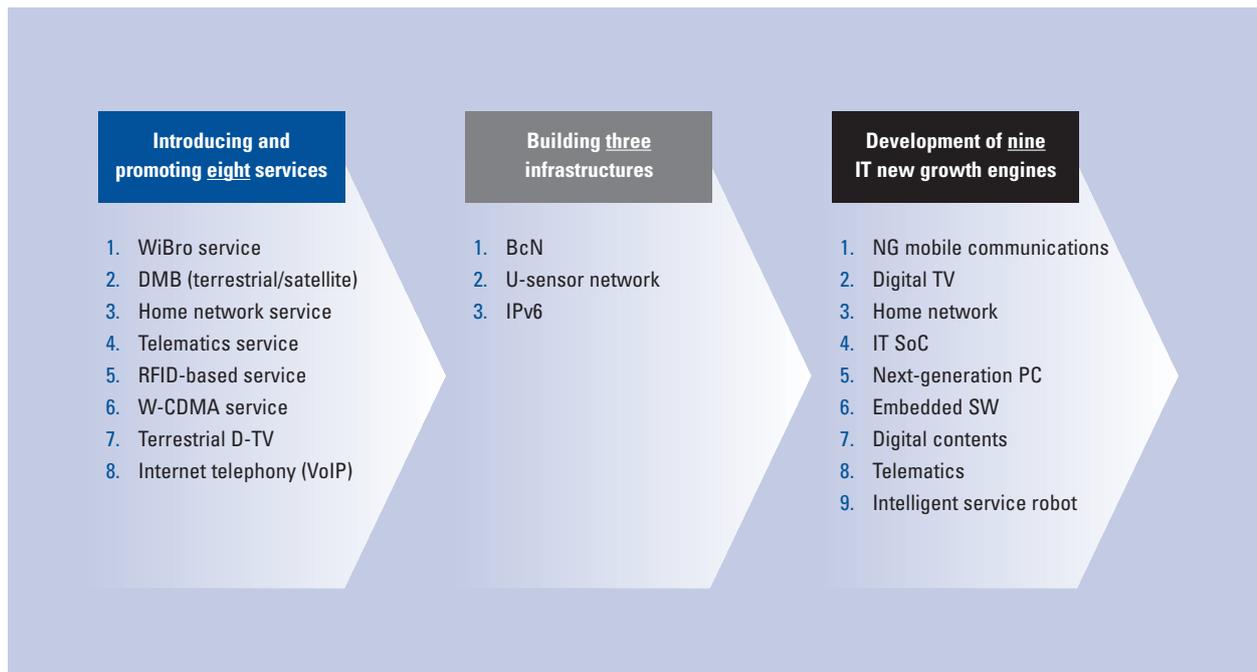
The applications of the IT industry spread to both the private and public sectors. As IT was being used more and more in a variety of fields, including

e-commerce, finance, education and medical services, the potential market growth of the supporting software industry burgeoned. IT services became a routine part of people's daily lives and government services, as well as essential to the industries summarized in Table 2. Although the system integration business is very competitive, the software package industry has not achieved a global competitiveness level, partly because of language and cultural barriers.

IT industry policy: IT839

In the early 2000s, with the collapse of the dot-com bubble and the slowdown in IT sector growth, the Korean IT industry had to find new opportunities. The growth strategy for IT service infrastructure and IT manufacturing evolved in stages, as noted in Table 3. For infrastructure, the vision of e-Korea (which involved ADSL-based broadband Internet) evolved to become u-Korea (ubiquitous broadband mobile Internet), and IT manufacturing evolved correspondingly.

In 2003, the Korean government began to seek a new momentum that would drive the growth of the country for the next 10 years. To this end, the Ministry of Information and Communication (MIC) has established the IT839 project as a major item on the national agenda (see Figure 1). IT839 aims to establish a virtuous

Figure 1: The IT839 project

Source: Korean Ministry of Knowledge Economy.

circle structure by harmonizing eight new services, including wireless broadband (WiBro) and DMB; three cutting-edge infrastructure items (broadband convergence network (BcN), ubiquitous sensor network (USN), and Internet protocol version 6 (IPv6)); and nine new growth engines (new-generation mobile telecommunications, digital TV, telematics; and so on). To implement the R&D projects of IT839, the government adopted the merit-based project manager system and restructured the organization of ETRI, which was the primary technology developer.

IT839 has achieved the following goals: (1) effectively branding IT839 in order to create wide support from the public, (2) synergizing the value chain of the IT industry, and (3) forecasting the impact of industry policy and enhancing the accountability of project managers.

Through these projects, Korea enhanced its capacity to be more adaptive to the demand trend of the global market. Since the successful implementation of IT839, Korea has upgraded its IT stance and gone from being a technology-absorbing country to being a technology-leading country, reducing the gap in this area with the United States and strengthening the basis of global collaboration. The applications are mainly developed for entertainment and games, however, and integration with traditional manufacturing and service industries is not yet sufficient.

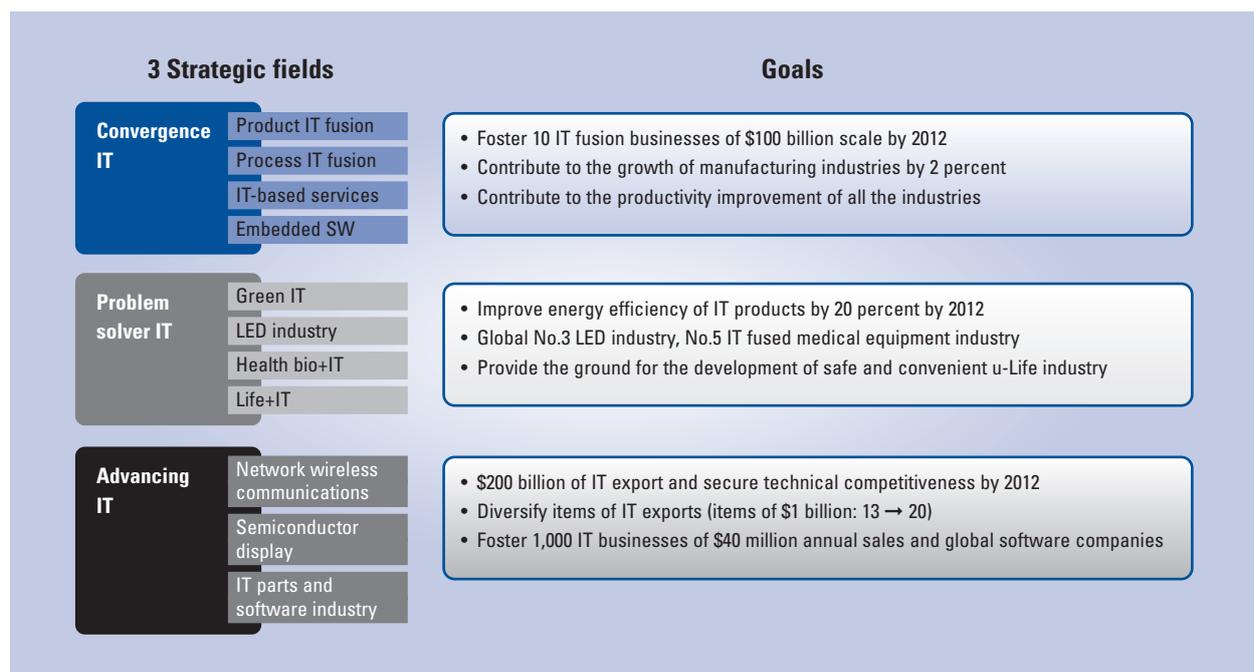
The future of IT

An overall slowdown in the IT industry has been recently observed around the world as demand has reached the saturation point. The IT device industry, in particular, has experienced a more serious slowdown than IT services, and has reached a watershed, and can no longer follow its export-centered policy. Because China, Taiwan, and India are emerging as strong players in this sector, in addition to the United States and Japan, Korea's position has been further weakened. As a new type of demand is emerging because of the aging of Korea's population, among other factors, a new form of IT industry has become necessary.

A new strategy for the IT industry

Korea's new administration merged MIC with the Ministry of Knowledge Economy (MKE), established the Korea Communications Commission (KCC) in 2008, and proposed a "New IT Strategy." This strategy reflects the facts that (1) the source of growth should be found outside—for example, in integration with manufacturing and services—rather than inside the IT industry in order to sustain the latter's growth potential; and that (2) IT should be actively used to address social problems, proceeding with green IT to help environmental sustainability and providing new products to assist the country's aging society, for example. By seeking new IT niches sooner than other countries, Korea may be able to be the first mover for new future markets. The MKE announced that it will develop the IT

Figure 2: Three major areas and goals in the New IT Strategy



Source: Korean Ministry of Knowledge Economy.

industry with a differentiated strategy by extending its scope of integration according to the notions put forth by the New IT Strategy.

Characteristics of the New IT Strategy

The ultimate goal of the New IT Strategy is to improve the industrial structure and address social problems by applying IT. It differs strategically from previous policies by providing for:

- transition from quantitative expansion to qualitative improvement of the traditional industry;
- expansion from IT to other industries;
- transition from imitation strategy to market leader strategy;
- transition from government/conglomerate-centered policy to private sector-centered policy with government support; and
- deregulation and demand creation.

The government is planning to implement the New IT Strategy in three main areas by integrating previously separate industrial fields to carry out the policies stated above. The details are as follows (see Figure 2).

1. Converging IT with major industries

- Promote the fusion of IT with major industries and strengthen the basis of the fusion.

— Promote IT use in traditional industries by improving productivity and renovating the industry structure.

— Enhance the productivity of the service industry using IT.

— Use software as a catalyst for inter-industry fusion, and develop the software for all industries.

2. Solving economic and social problems by using IT

— *Green IT*: Enhance the energy efficient and environmentally friendly characteristics of IT products and establish the medium- and long-term policy to implement this.

— *Light-emitting diode (LED) industry*: Enhance the competitive power of the LED lighting industry and upgrade it to become the world's third largest producer. To this end, support pilot energy-saving projects.

— *IT combined medical devices*: Upgrade the medical device makers to become the world's fifth largest makers by combining the devices with IT.

— *u-Life*: Make life safer and more convenient by deploying IT applications more effectively.

3. Advancing IT products

- *Semiconductors*: Foster the development of system semiconductor devices on the robust basis of memory devices, and nurture small- and medium-sized enterprises (SMEs) in the equipment and materials industries.
- *Display*: Maintain the leading edge in display devices and improve thin and flexible display technology power.
- *Wireless communication equipment*: Spread the mobile phone success of large companies overseas and to SMEs.
- *Broadcasting communication service and network*: Construct a productive circulation system composed of devices and services and support their exportation.
- *IT parts*: Strengthen the competitive powers of IT parts of high potential.
- *Software industry*: Cultivate software companies that have globally competitive power.

The investment plan for the New IT Strategy industries is shown in Table 4; future prospects of the IT industry after the plan's implementation are depicted in Figure 3.

The Korean government plans to modify the organization and provide support to the industry, in order to accomplish the goals of the New IT Strategy by 2012: US\$200 billion in exports and US\$300 billion in domestic production; to cultivate at least 10 IT fusion industries whose market sizes are larger than US\$1 billion; and nurture 1,000 IT companies whose sales are at least US\$40 million and 10 global software companies. The government's plan included the following policy items:

- Enact the "Act for the Promotion of Information Communication Industries" (tentative name).
- Reduce the R&D funding obligation of the wired communications service providers by 0.1 percent per year (and the dominant providers' obligation by 0.15 percent) to zero in 5 years.
- Integrate the overseas marketing and center for IT to KOTRA, and organize a dedicated team.
- Invest US\$230 million to train 20,000 IT workers by 2012.
- Strengthen intellectual property rights and the ability to respond to the patent attacks from overseas companies.

Table 4: Investment plan for the New IT Strategy's industries

CLASSIFICATION		2008 budget (Korean won, millions)
Fusing IT with other industries	• Fusion of industrial technologies ^a	87.5
	• IT utilization (including non-R&D)	25.5
	• Software and computing ^b	157.5
IT solution for socioeconomic problems	• LED (including non-R&D)	35.8
	• Medical equipment (including non-R&D)	50.6
	• Green IT (including non-R&D)	2.5
	• u-Life	8.1
IT advancement	• Semiconductor	101.8
	• Display	32.0
	• Mobile communications ^c	52.4
	• Network (BcN, etc.)	54.0
	• IT parts (sensor, fused parts, etc.)	80.2
TOTAL		687.9

Source: Korean Ministry of Knowledge Economy.

a Non-R&D included in IT utilization, LED, medical equipment, and Green IT.
b The fusion of industrial technologies, software, and computing is in accordance with the 14 Major Source Technologies defined by the Ministry of Knowledge Economy (in addition to the separately defined IT parts).

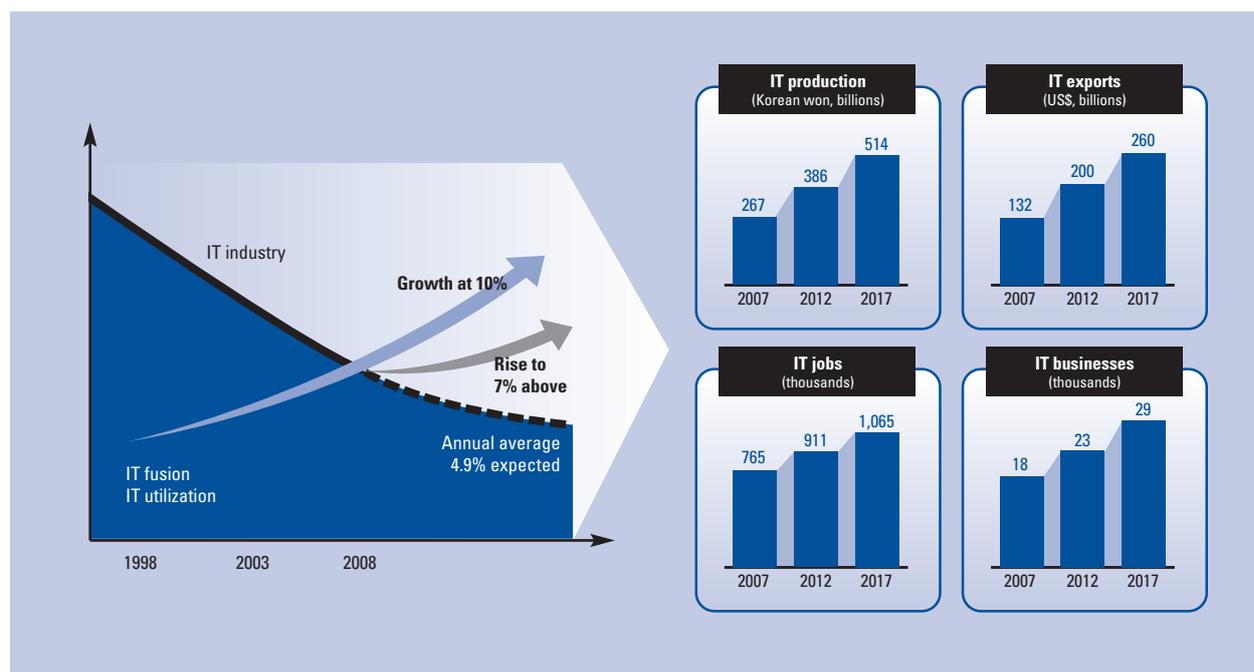
c The development of broadcasting and communication technologies will be driven jointly with the Broadcasting and Communications Committee, and provide the basis for market launching.

Lessons from the Korean IT experience

Korea has become a world leader in IT hardware and telecommunications. The key factors that contributed to make this happen are:

1. The boundary between the IT hardware and electronics industries has become blurred, particularly with respect to memory chips, displayers, and mobile phones. Thus the strong electronics industry, led by Samsung Electronics and LG Electronics, provided the foundation for the IT device industry. Hence we can say that a strong electronics industry is a key enabler of the IT hardware industry.
2. To become an ICT global leader, leadership in technology is a must. Samsung Electronics and LG Electronics have committed to become the leaders in memory chip, display, and mobile phone technologies. They compete in both the domestic and global markets. In the telecommunications industry, SK Telecom has risen to the challenge and succeeded in being the first to develop CDMA commercial technology, thus becoming the leader in CDMA-based telecommunications service business.
3. The proactive role of government policy in the telecommunications industry was crucial in propagating new standard platforms such as ADSL for the Internet and CDMA for mobile phones.

Figure 3: Future prospects of the IT industry after the implementation of the New IT Strategy



Source: Korean Ministry of Knowledge Economy.

4. As the policy of IT839 has shown, the integrated development of IT services, infrastructure, and devices creates synergies and is essential along the industry's value chain.
5. Developing the global marketing force of large corporations, such as Samsung Electronics and LG Electronics, provided the main business drivers for global IT business. These firms could lead the cluster of IT manufacturing business.
6. In their quest for world-class IT excellence, Korean IT corporations had to overcome many different challenges, including financial crises and oil shocks, and had to discover new answers every time.
7. Korea was not successful in the software package business. Software exports from non-English-speaking countries seem difficult because of the language barrier. However, the software industry is regarded as an important sector for the development of knowledge-intensive employment.
8. Korea is now facing an IT slowdown. To overcome the current challenge, the country is investigating new opportunities by integrating IT with traditional industries, both in product and process innovation.

Conclusion

Korea relies heavily on exports, of which IT-related products account for one third.¹⁴ Considering this high dependency and the huge potential of IT, it is quite reasonable to focus national development efforts on the IT industries. The current global recession poses both challenges and opportunities for Korean IT companies. To cope with the challenges, the primary concern is to secure the competitive edge of the major players. This will be achieved more effectively by focusing on technology development rather than on cost. This approach is quite different from the strategy adopted during the 1980s and 1990s, which depended primarily on cost reduction.

The New IT Strategy will determine the future of the IT industry in Korea. While the IT839 strategy of the early 2000s was aimed at the development of the overall IT industries by strengthening collaboration among services, infrastructure, and devices, the New IT Strategy aims at the creation of new demand by integrating IT with traditional industries, thus benefiting both. The strategy also converts government initiation to private-sector initiation. However, some aspects of the New IT Strategy remain the same as before: upgrade the technology, lead the global standard, and educate highly qualified workers.

During the Korean War, General MacArthur said, "It will take at least 100 years to rebuild this country." But Korea succeeded in becoming one of the 13 largest economies in the world in less than half a century. This

phenomenal effort may justly be termed the “Miracle on the Han River.” One more take-off with IT will transform Korea into a truly advanced economy. Many are watching Korea to see how it will utilize its opportunity and potential amidst the daunting global economic outlook and the slowing growth rate of the IT industry.

Notes

- 1 Jeon and Bae 2007.
- 2 Lee et al. 2007d.
- 3 Lee et al. 2007b.
- 4 Lee and Park 2007.
- 5 Kim and Cho 2007.
- 6 Lee and Lee 2007.
- 7 Park 2007.
- 8 Lee et al. 2007c.
- 9 Kwon and Lee 2007.
- 10 Lee et al. 2007a.
- 11 Chung and Cho 2007.
- 12 Min et al. 2007.
- 13 Yoo et al. 2007.
- 14 OECD 2006.

References

- The Bank of Korea. Available at <http://www.bok.or.kr/>.
- Chung, Y. and J.-S. Cho. 2007. “The First Smart Chip-based Mobile Banking Service: KBmobile of KB Bank.” In *Premier E-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*, ed. J. K. Lee, B. G. K. Siew, and V. Sethi. Singapore: Pearson Prentice Hall. 316–34.
- Etnews. 2005. *Corporation Digital Korea*. Available at <http://www.etnews.co.kr/>.
- Goldman Sachs. 2005. *Global Economics Paper No. 134*.
- IITA (Institute of Information and Technology Advancement). Available at <http://www.iita.re.kr/>.
- Jeon, H. and S. Bae. 2007. “The World’s Highest Broadband Penetration with ADSL: Korea.” In *Premier E-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*, ed. J. K. Lee, B. G. K. Siew, and V. Sethi. Singapore: Pearson Prentice Hall. 283–315.
- Kim, K.-C. and D.-S. Cho. 2007. “The POSCO Way of Digital Supply Chain Revolution.” In *Premier E-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*, ed. J. K. Lee, B. G. K. Siew, and V. Sethi. Singapore: Pearson Prentice Hall. 68–103.
- KISDI (Korean Information Society Development Institute). 2007. *Strategy for the Development of IT Industry*.
- Korea National Statistical Office. Available at <http://www.nso.go.kr/>.
- Kwon, S. B. and K. J. Lee. 2007. “The First Successful Relationship-Based Online Community: Cyworld.com.” In *Premier E-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*, ed. J. K. Lee, B. G. K. Siew, and V. Sethi. Singapore: Pearson Prentice Hall. 220–40.
- Lee, Z. and D.-S. Lee. 2007. “Transition from a Buyer’s Agent to a Procurement Service Provider in B2B: iMarketKorea.” In *Premier E-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*, ed. J. K. Lee, B. G. K. Siew, and V. Sethi. Singapore: Pearson Prentice Hall. 127–54.
- Lee, J. K. and J. H. Park. 2007. “Combining ERP and eSCM for Purchasing Innovation: Volvo Construction Equipment Korea.” In *Premier E-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*, ed. J. K. Lee, B. G. K. Siew, and V. Sethi. Singapore: Pearson Prentice Hall. 41–67.
- Lee, S. E., Y. S. Jang, and B. T. Lee. 2007a. “Challenging Global Internet Titans: NHN Corp.” In *Premier E-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*, ed. J. K. Lee, B. G. K. Siew, and V. Sethi. Singapore: Pearson Prentice Hall. 258–82.
- Lee, J. K., J. Kang, J. H. Park, and J. S. Kim. 2007b. “Real-time Performance Assessment and Risk Prevention for Global Business Process: Samsung SDI.” In *Premier E-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*, ed. J. K. Lee, B. G. K. Siew, and V. Sethi. Singapore: Pearson Prentice Hall. 1–24.
- Lee, J. K., J. Kang, J. H. Park, and K. Park. 2007c. “Excellence of Knowledge Management Comes Only When Combined with Corporate Culture: LG CNS.” In *Premier E-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*, ed. J. K. Lee, B. G. K. Siew, and V. Sethi. Singapore: Pearson Prentice Hall. 189–219.
- Lee, J. K., B. G. K. Siew, and V. Sethi, eds. 2007d. *Premier e-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*. Singapore: Pearson Prentice Hall.
- Min, D., Y. M. Nam, D. W. Roh, S. G. Park, and D. H. Choi. 2007. “Profitable Purely Online Brokerage: Kiwoom.com.” In *Premier E-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*, ed. J. K. Lee, B. G. K. Siew, and V. Sethi. Singapore: Pearson Prentice Hall. 358–90.
- MKE (Ministry of Knowledge Economy). Available at <http://www.mke.go.kr>.
- MKE (Ministry of Knowledge Economy). 2008. *New IT Strategy: IT Industry Is the Hope of Korean Economy*. July 11.
- OECD (Organisation for Economic Co-operation and Development). 2006. *IT Outlook 2006*. Paris: OECD Information Communication Committee.
- Park, J. 2007. “Customer Relationship Management at SK Telecom: Towards Mobile Personalization.” In *Premier E-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*, ed. J. K. Lee, B. G. K. Siew, and V. Sethi. Singapore: Pearson Prentice Hall. 175–88.
- Yoo, J. S., H. Kim, K. I. Park, and B. T. Lee. 2007. “Customer Protection Strategy in the Online Auction: Internet Auction Co., Ltd.” In *Premier E-Business Cases from Asia: Problem-Solution-Challenge-Impact Approach*, ed. J. K. Lee, B. G. K. Siew, and V. Sethi. Singapore: Pearson Prentice Hall. 391–407.