




D y n a m i c D i g i t a l K o r e a

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D y n a m i c D i g i t a l K o r e a

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A handwritten signature in cursive script that reads "D. Chin".

DAEJE CHIN, Ph.D.

Minister

Ministry of Information and Communication

The telecommunications revolution has led to a paradigm shift in the way people live, work, communicate and entertain. This transformation from analog to digital, and ultimately to the information society is possible thanks to the deployment of national broadband networks. Korea has been at the forefront of this revolution; the country's broadband Internet penetration ratio surpassed 70.5% last December. Korea's remarkable success is widely admired and emulated by countries that want to introduce the digital revolution into their own economies.

Korea is a world leader in bringing about informatization in the economy and society. Advanced electronic civil service, e-commerce, Internet banking and other online application services have made an impressive difference in the quality of life of the Korean people. The contribution of IT in the Korean economy's growth is tremendous: in fact, the IT sector has emerged as the single most important engine of economic growth, representing 29.4% of the nation's total exports in 2004. Such growth was achieved despite the recent slowdown in the world telecommunications markets.

Of course, Korea must continue to make efforts to ensure the digital revolution's success. We must address the adverse effects of information technology in areas such as privacy infringement, hacking, virus and spam. Also, we need to bridge the digital divide and achieve a digitally inclusive society so that the benefits of IT are equally shared by the Korean people. Furthermore, Korea must deal with strong competition from late-industrializers in its traditional export strongholds such as semiconductor, mobile communications and LCD industries. Another challenge is promoting Korea's competitiveness in digital contents and software

industries, as well as narrowing the technology gap between Korea and other advanced economies.

Nevertheless, limitless opportunities lie ahead, thanks to the convergence of telecommunications, broadcasting and the Internet on the broadband network. It will soon be possible to enable person-to-object communication and object-to-object communication, the hallmark of the ubiquitous society. These developments are expected to provide new momentum to the Korean economy's growth in the future.

The Ministry of Information and Communication established the IT839 Strategy to guide Korea towards the ubiquitous society. Under the IT839 Strategy, new telecom and broadcasting services will be introduced. These services will encourage investment into necessary infrastructures. Based on these infrastructures, the private sector will be able to develop new software and hardware products. It is hoped that the IT839 Strategy will help Korea respond to the rapidly changing domestic and international technology and market environments.

Ultimately, Korea aims to harness the power of IT to bring down the walls dividing generations, regions and countries, and realize a society where people have equal digital opportunities.

The 2004 White Paper introduces the accomplishments of the Korean IT sector over the last year. It also provides the overall picture of Korea's vision and policy directions. I hope this publication will be a welcome reference for those who are interested in the Korean IT sector.

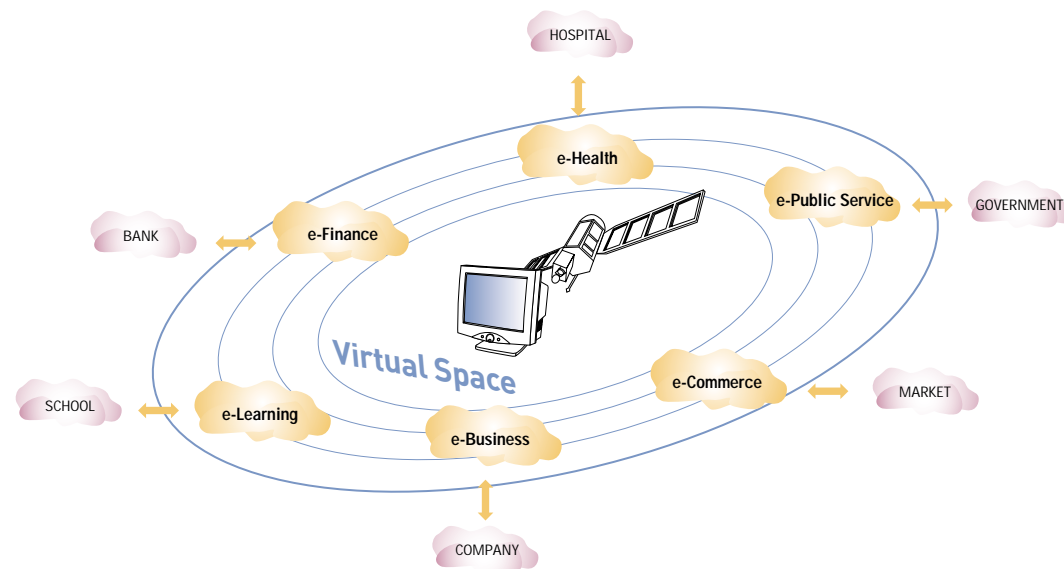
In the near future, limitless communication between person-to-person, person-to-object, and object-to-object will be possible

As we enter the 21st century, the limits of time and space that have restricted our daily lives are disappearing with the development of semi-conductors, computers, the Internet, and other types of information technology. At the same time, the global social paradigm is rapidly shifting from an industrial society to an information society, and from a knowledge-based society to a ubiquitous society. It seems that Korea will be able to realize the ubiquitous society that aims to achieve limitless communications between person to person, person to object, and object to object, in the not-too-distant future with the integration and convergence of digital technologies and government policy efforts.

The Roh Moo Hyun Administration, which was launched in 2003, has made vigorous efforts to vitalize the Korean IT industry despite the sluggish domestic economy and the recession in the global IT market. In 2004, the IT industry played a crucial role in the national economy and accounted for 29.4% of the country's total exports or USD 74.7 billion (total export: USD 253.8 billion). Because of its world-class IT infrastructure, Korea reached the top rankings of

key IT indices. In 2003, the International Telecommunication Union's (ITU) Digital Access Index (DAI), a measurement that gauges access to information and communication technology, ranked Korea 4th among 178 economies. The World Economic Forum (WEF) placed Korea 20th out of 102 countries in its Network Readiness Index(NRI). The Roh Moo Hyun Administration has pursued building a knowledge-based society to enhance transparency and efficiency across all socio-economic spheres on the basis of advanced IT infrastructure. At the same time, the government has actively tackled increasingly sophisticated and diverse cyber attacks and privacy infringement to create a safe and sound information society. To drive the Korean economy over the next five years and increase per capita income to USD 20,000, Korea identified nine new growth engine sectors in the IT field. Using these key sectors, the government has encouraged developments in technology and human resources. It has improved regulation to facilitate competition in the telecom and radio sectors, and implemented various policies to promote the convenience of users. In particular, Korea has stepped up its efforts to cooperate in the area of global IT and attract R&D centers to grow into an IT hub of Northeast Asia.

[Figure 1-1] Ubiquitous Society



The government's IT839 strategy is aimed at harnessing the rapidly changing digital technologies to provide new momentum to the Korean economy's growth

Government efforts to create an information society are backed by the development of rapidly changing digital technologies. Technical advances in the integration and convergence of voice and data, telecommunication and broadcasting, and fixed and wireless technologies, has given birth to new products that blur the barriers of industries like telematics (IT vehicles), home networks (IT construction & home appliances) and on-line financial services (IT finance). Such a dynamic IT environment heralds the digital revolution, characterized by "digital convergence" and "ubiquity", and provides momentum to the nation's second economic boom. The Korean government is raising its profile as an advanced IT country by actively embracing these changes.

The IT839 Strategy illustrates the government's active efforts towards u-Korea, which will bring change to the lifestyle of the citizens through IT. The IT industry is an area where equipment and software are compatible based on networks. Telecommunication service, infrastructure, equipment, software and contents consist of horizontal and vertical value chains of the IT industry. The IT839 Strategy was set forth as a new development strategy for this sector in accordance with the unique characteristics of the IT industry. Under this strategy, the intro-

duction and development of eight new IT services will, in turn, encourage investment into three key network infrastructures. Based on the infrastructures, nine promising sectors - equipment, terminal, software, contents, etc. - will enjoy a synergy as a result of concurrent growth through cooperation among the government, private sector, and research institutes.

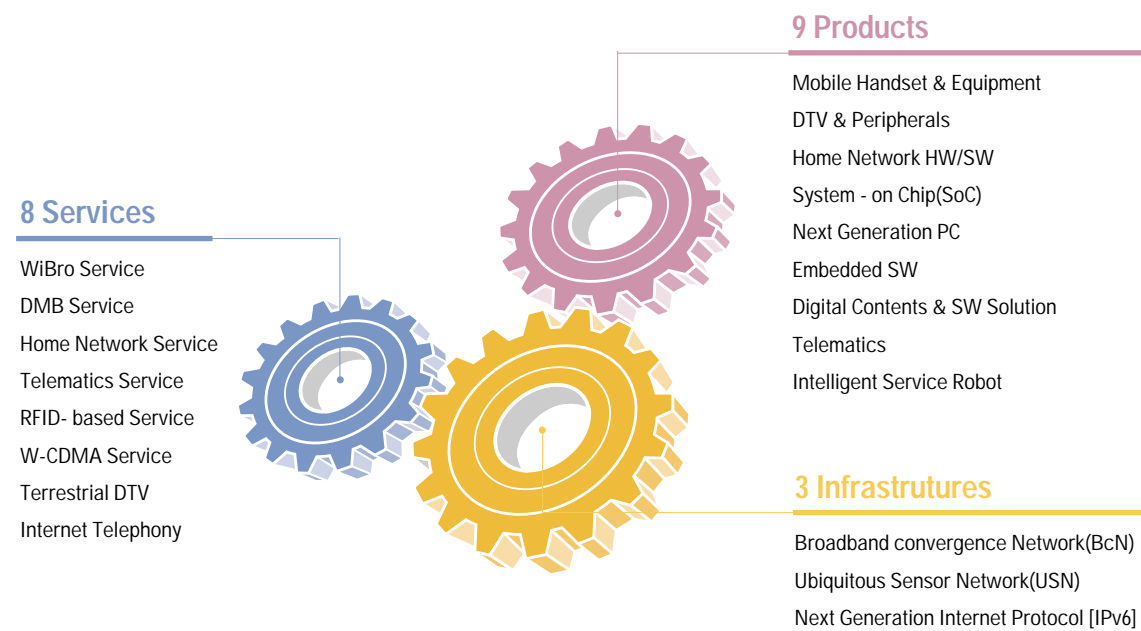
To implement the IT839 Strategy, the government plans to encourage investment in IT facilities for eight new services such as Wireless Broadband(WiBro), satellite and terrestrial Digital Multimedia Broadcasting(DMB), home network, telematics and Radio Frequency Identification(RFID)-based services. At the same time, it will facilitate the use of existing services such as W-CDMA, terrestrial Digital TV(DTV) and Voice over Internet Protocol(VoIP). It also plans to continuously support international standardization activities. The three major

The IT839 strategy will spur qualitative changes into the economic paradigm, ultimately realizing a ubiquitous Korea.

infrastructures include the broadband convergence network, u-sensor network, and the next-generation Internet protocol(IPv6). The Broadband convergence Network (BcN) aims to prepare for the era of convergence between telecommunications and broadcasting. The u-sensor network is being highlighted with the advent of the ubiquitous society. The next-generation Internet protocol(IPv6) is expected to provide the basis for the Korean IT industry's future growth. The government's nine new growth engine sectors include such sectors as next-generation mobile communications, DTV and broadcasting, home networks, IT SoCs, next-generation PCs, and intelligent service robots. Based on these sectors' potential competitiveness and growth, the government will develop concrete R&D plans, create world-class IT clusters, attract R&D centers from global IT companies, and expand its support for technological development.

The IT839 Strategy focuses on the belief that IT will bring qualitative changes into the economic paradigm. It aims to realize a ubiquitous world by forming a virtuous circle of developing new services, infrastructures, and growth engine sectors. Through the IT839 Strategy, the government will improve the convenience of people at home by realizing a digital home, providing more advanced e-government services via mobile and other means, and strengthening corporate competitiveness through digitization. It will also realize a ubiquitous society which enables

[Figure 1-2] IT839 Strategy



Introduction & Promotion of 8 Services

[Table 1-1] IT839 Strategy: 8 Services

Classification	Goals for 2005	Mid & Long-term Goals
WiBro service	IEEE Standardization, Trial Service	Secure 9 million users
DMB service	Provide DMB service	Launch terrestrial DMB nationwide
Home Network service	Provide 1.5 million households with BcN/IPv6 interworking	Deliver service to 10 million households
Telematics service	Standardize terminal platform, Provide service in Jeju island	Deliver service to 4 million vehicles
RFID-based service	Launch pilot projects in the 9 sectors, Verify performance of tag/reader	Adopt u-Life in daily lives
W-CDMA service	Build network in 23 major cities	Build nation-wide network in cities
Terrestrial DTV	Provide digital broadcasting to cities and towns	Launch digital broadcasting nationwide
Internet Telephony (VoIP)	Introduce interconnection system, Secure 1 million users	Secure 4 million users

Building 3 Advanced Infrastructures

[Table 1-2] *IT839 Strategy: 3 Infrastructures*

Classification	Goals for 2005	Mid & Long-term Goals
Broadband convergence Network(BcN)	Provide broadband service Launch pilot project for high-quality video & customized Internet contents Develop and standardize quality-guaranteed router	Secure 2 million subscribers
U-Sensor Network(USN)	Devise u-IT hub building plan, Fuel demand Build a common test-lab to support technological development by SMEs Develop RFID solution for cellular phones	Adopt u-Life in daily lives
Internet Protocol (IPv6)	Expand IPv6 pilot projects, Roll out public & commercial networks Upgrade domestically-developed router and server	Complete conversion to All-IPv6

Promoting 9 IT Sectors as New Growth Engines

[Table 1-3] *IT839 Strategy: 9 New Growth Engines*

Classification	Goals for 2005	Goals for 2007
Next-generation mobile communications	Develop WiBro prototypes	Develop prototypes of 3G Evolution terminal/base stations
Digital TV - Broadcasting	Develop information-selective DTV terminal	Develop interactive DMB terminal
Home Network	Develop home servers with converged telecommunications & broadcasting networks	Develop home server combining telecommunication - broadcasting - games
IT SoC	Develop low-power chips for mobile communications	Develop embedded intelligence chips
Next-generation PC	Develop prototypes of wearable computers	Commercialize wearable computers
Embedded S/W	Develop nano-embedded operating system	Embedded S/W supporting context recognition service
S/W solution & Digital Contents	Develop extra-role digital actors	Develop leading-role digital actors
Telematics	Build open telematics terminal S/W	Develop realistic image service technology
Intelligent service robot	Develop network-based service robots	Commercialize network-based service robots

communication between person to person, person to object, and object to object. This will be done by embedding intelligence in objects and humans, and connecting all elements via the network.

While previous focus was on simple IT investment and strategy centered on outcomes, the new emphasis is on common basic structure such as architecture, standard, interoperability and interface.

For success in IT diffusion, it is important to study the strategic way of leveraging IT at the national level. The Korean society has transformed itself under a new social and economic paradigm. Previous focus has been on simple IT investment and a strategy centered on outcomes and benefits of individual projects. The emphasis now is on a common basic structure such as architecture, standard, interoperability and interface. Therefore, the Korean government will commit itself to deploy its backbone network and BcN, in close cooperation with the private sector. It will spare no policy efforts to manage the IT industrial structure in a reliable and safe manner as personal and corporate activities in Korea are highly dependant on the IT infrastructure. In order to enhance efficiency and effectiveness in IT diffusion investment, the government will closely work with the private sector to establish a firm technological, legal and institutional base. These efforts will prevent the gap of digital divide from widening, provide equal opportunities to utilize information, and improve personal income and quality of life through the productive use of information. Ultimately, the essence of IT diffusion lies in giving equal digital opportunities to all members of society.

The Korean government's IT839 Strategy serves its purpose as a national strategy. It promotes industrial and economic development; seeks to bring down the walls between regions, classes and generations, and improves the quality for life of people.

Achievements and Vision

Expanding the Information Society

Building Information Society Infrastructures

Safe and Sound Information Society

Advancing Information Technology



1. Achievements and Vision

I. Environmental Changes & Achievements

environmental changes

Technological developments, such as the broadband telecommunication network and digital broadcasting technologies, have brought about new technical trends of convergence between fixed and wireless, voice and data, and telecommunication and broadcasting. To keep pace with these changes and show that IT is the driving engine of a new revolution across the society, the Roh Moo Hyun Administration launched in February 2003 set forth 'Broadband IT Korea Vision 2007' in December 2003. The vision also aims to overcome the economic slowdown with the adoption of IT and present growth engines that enable Korea to achieve per capita income of USD 20,000.

The Korean government continues to make efforts to keep pace with innovative developments in information technology.

achievements

1) Upgrading IT infrastructure

In February 2004, the government drew up the 'Basic Plan for Building of Broadband Convergence Network (BcN).' The purpose of the plan is to create an environment for high-quality broadband multimedia services at speeds of 50-100Mbps by combining telecommunications, broadcasting, and the Internet. In preparation for the ubiquitous society, the government has outlined and implemented the 'Basic Plan for the Building of u-Sensor Network (USN)'. The gist of this plan is to attach an electronic chip into all objects and connect them with the Internet, thereby verifying the ID of the objects, and recognizing and managing the information in its environment.

2) Realizing innovative e-government

The e-Government project, once co-managed by the Ministry of Information and Communication (MIC) and the Ministry of Government Administration and Home Affairs (MOGAHA), has been implemented on a national level. In May 2004, the government decided that MIC should take charge of the following tasks out of the 31 projects for e-government. These include building an e-government infrastructure, upgrading the e-government telecommunication network, creating a government-wide integrated computing environment, applying information technology architecture (ITA) across government sectors, building information security systems, and supporting the deployment of

e-government overseas. The MOGAHA assumed responsibilities for the remaining tasks. The government's open e-government will make administrative information available online and deliver innovative, efficient and transparent services through diverse forms of e-government services such as M-Gov, T-Gov and u-Gov.

3) Expanding IT diffusion and e-commerce in the private sector

The government supported a variety of IT diffusion projects for SMEs such as digitization through IT rentals and the delivery of customized solutions that reflect the nature and sizes of businesses. It also built B2B networks for major business sectors such as electronics, automobiles and construction while paving the way for e-commerce by establishing e-commerce related acts such as the 'Electronic Signature Act' and the 'Basic Act on e-Commerce'.

4) Realizing a safe and sound digital society

In order to secure the safety and credibility of Internet networks that directly affect the activities of enterprises and people, the Korean government established the Korea Computer Emergency Response Team Coordination Center (CERTCC-KR) in December 2003. The center, equipped with a swift emergency response system, is responsible for network monitoring for the Internet around the clock, activating an alert and warning system in case of Internet incidents and extending technical support for incident handling.

II. Broadband IT Korea Vision 2007

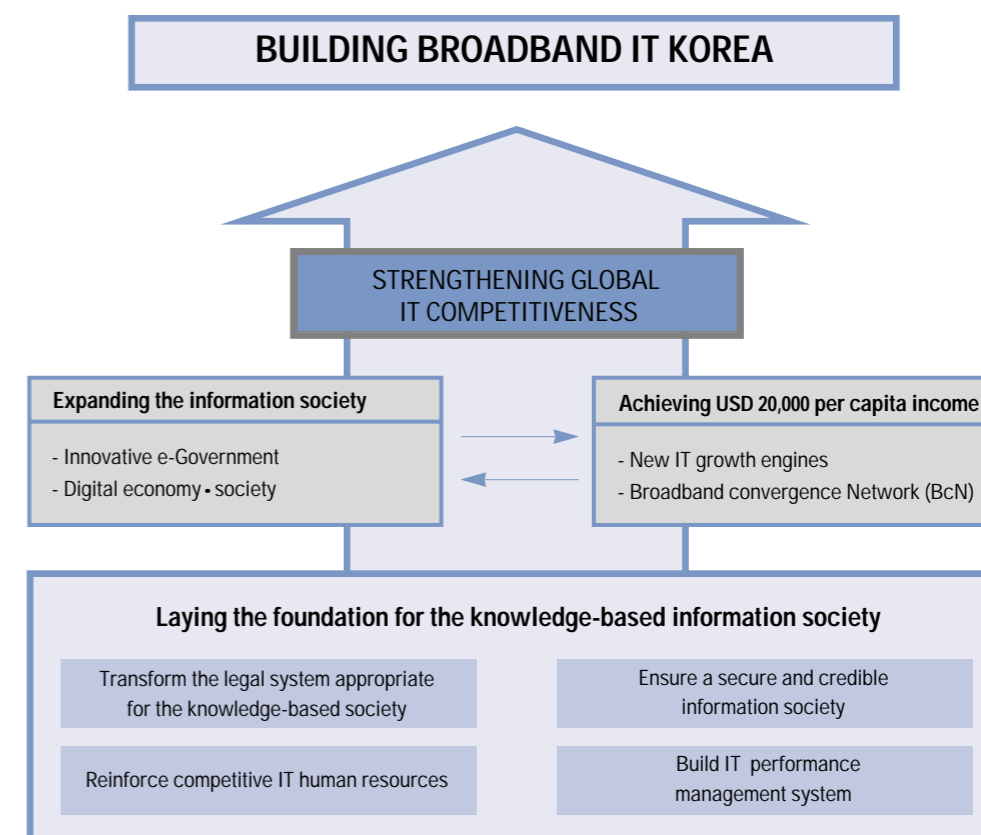
basic directions & goals

The Korean government will execute 'Broadband IT Korea Vision 2007' along the following lines.

- Enhance transparency, efficiency, and the innovative delivery of administrative services through e-government.
- Promote Korea's international competitiveness by facilitating efforts to integrate information technology in the economy.
- Build a BcN and develop new growth engine sectors with the goal of achieving per capita income of USD 20,000.
- Create a digital welfare society where every Korean can play a leading role.

'Broadband IT Korea Vision 2007' aims to strengthen Korea's IT competitiveness.

[Figure 2-1] Concept Map of Broadband IT Korea Vision 2007



- Lead the global information society by strengthening international cooperation.

major contents

'Broadband IT Korea Vision 2007' is about delivering innovative administrative services using the world's best open e-government, enhancing the international competitiveness of Korean companies through industry-wide integration of information technology, realizing a digital welfare society where everyone can

play a leading role through the deployment of BcN and the promotion of new IT growth engine sectors, and leading the global information society by strengthening international cooperation.

1) Expanding the knowledge-based information society

Korea hopes to revolutionize administrative management, delivery of civil services, and information resources management with a goal of building the world's best open e-government. This will be in accordance with the e-government roadmap.

2) Providing the basis for the information society

The Computer Emergency Response Team Coordination Center (CERTCC) was set up to create a safe and credible cyber space by protecting networks from increasingly sophisticated cyber attacks. To prepare for an integrated fixed and wireless environment, the government will build an e-signature certification system that allows users to use a single certificate for e-signature, and enhance Korea's competitiveness in encryption technology through the development of a standard encryption algorithm.

3) Providing the basis for new growth engines

The government plans to develop new growth engines in the IT sector such as next-generation mobile communications, displays, digital TVs, home networks, next-generation semi-conductors, next-generation batteries, embedded software, digital contents, intelligent robots, and next-generation PCs. Concurrently, it will create an environment for users to enjoy seamless high-quality multimedia services at any place and any time by rolling out the 50~100Mbps BcN that combines fixed, wireless and broadcasting networks.

4) Leading the global information society through strengthened international cooperation

Korea will establish its position as an IT hub country in Northeast Asia. It will do so by forging a cooperative system to create an information culture in the region and mediate its exchanges. It will also take a leadership role to spread e-culture throughout the world by participating in the building of IT infrastructure across the globe. In the meantime, Korea will help digitally deprived countries adopt IT through various channels and narrow the digital divide.

An important policy goal of the Korean government is to encourage SMEs to integrate IT into their businesses.

I. Diffusion of the Digital Economy

expanding e-work system

In order to encourage SMEs to make voluntary efforts to integrate information technology into their businesses, the MIC hopes to give such entities income and corporate tax cuts. The MIC is consulting with relevant ministries and taking necessary steps. In addition, the MIC will carry out a project that evaluates IT diffusion in businesses so that SMEs can identify where they stand in terms of applying information technology. It will also develop an Information Strategy Planning (ISP) model for SMEs and provide them with advice so that they can identify appropriate strategies for integrating IT in their operations.

standardization for effective IT diffusion across the entire industry

Korea's standardization activities on e-Business are taking place with the participation of domestic institutions through the Electronic Commerce Integration Forum (ECIF) which was jointly founded by the MIC and the Ministry of Commerce, Industry and Energy(MOCIE) in June 2000. Role sharing and mutually cooperative systems among relevant entities extend effective support for these e-Business standardization activities.

expanding & developing b2b e-commerce

Globalization, cooperation, and the absence of tariffs characterize the new e-Commerce environment. To meet these challenges and reduce overseas entry barriers of on-line trading for SMEs, the government has outlined and is implementing long-term plans to secure e-Marketplace technology for cross-border cooperative systems. In 2003, it set up a cooperative system to share product information with key companies and implemented an online certificate mark program to improve corporate credibility and strengthen consumer protection. This helped create a secure online transaction environment.

creating a secure online trading environment

The government supports the development of application services to enable people to use e-signatures at any place and time with ease and convenience. It also supports the development of a new model for issuing, managing and veri-

fyng certificates in the Internet environment to ensure interoperability between fixed and wireless e-signatures.

II. Bridging the Digital Divide

Ensuring equal access to information

1) Assisting the deployment of broadband networks in rural areas

The project is being carried out by providing ADSL in small towns and townships. By 2005, the broadband networks will expand gradually into residential areas with more than 50 households. The building of broadband networks for the 100,000 households located on islands and in mountainous areas is quite a challenge. To meet this challenge, the government will introduce either a universal service system or provide budgetary support to offer them satellite Internet service by 2007.

2) Supporting the installation of multi-purpose information access facilities

The government set up Internet plazas equipped with computers and printers within rural post offices and low-income residential areas to give free access to digital information. As of December 2004, 2,780 Internet plazas were under operation. In 2005, the government plans to expand the size of information access centers after evaluating their operational performance. Also in 2005, the government will launch region-based e-Life pilot projects such as e-Learning, e-Health, e-Work and e-Safety in cooperation with local governments.

3) Distributing and enhancing the convenience of using IT peripheral devices and contents.

The Korean version of A-Prompt is a web-access evaluation tool that was developed in 2003. In a bid to figure out web access availability of people such as the elderly and the disabled who have difficulties in using the Internet due to their physical challenges, the government applied this tool to major government home pages in 2004. Unfortunately, this tool did not meet the web-access standard because it lacked "Alt-Text," a function that displays text messages about images on the browser. To provide alternate text for images, the most important part of a web-access standard, the government developed practical guidelines in June 2004 and a Korean version of web contents access guidelines in December

The Korean government hopes to ensure universal access to information in the near future.

2004. The MIC will resolve the alternate text problem in its homepage by using the above guidelines. For the disabled who have difficulties in accessing information due to their physical and economic hardship, the government is distributing IT equipment designed for them as part of its efforts to narrow the digital gap. It is also carrying out a second-hand PC distribution project. In this project, the government repairs second-hand PCs donated by individuals, organizations and companies and then distributes to people in lower-income classes, the physically challenged and those in social welfare facilities.

4) Improving legal and institutional systems

To narrow the digital divide, the government set forth a law entitled the 'Act on Closing the Digital Divide' in 2001, and designed a government-wide comprehensive plan for bridging the digital divide (2001~2005). In 2002, it set out guidelines for manufacturers and service providers to improve the accessibility of IT products and services. As legal and institutional systems improve, the government will continue to develop more detailed guidelines to improve access to major IT products and services and work on standardization through the IT Accessibility Standard Forum (IABF).

III. Management of Knowledge & Information Resources

Currently, the government is drastically expanding digital information resources, facilitating dissemination of information resources, restructuring the

[Table 2-1] *Digital Divide in Korea*

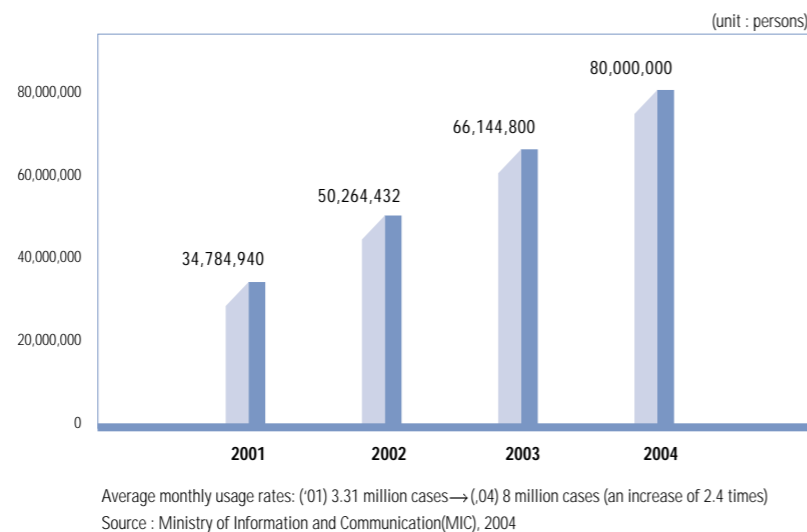
Category	Ordinary or Disabled	Age	Monthly Income	Residential Location	Gender
Early Adopters	Ordinary people	6-19	KRW 4M or more	Large cities	Male
Internet Adoption Rate	70.2	96.2	84.5	72.7	75.9
Late Adopters	The disabled	50 or above	KRW 1M or less	Small towns	Female
Internet Adoption Rate	34.8	19.3	32.1	50.9	64.6
Gap	35.4	76.9	52.4	21.8	11.3

Source: National Internet Development Agency(NIDA) Korea Agency for Digital Opportunity & Promotion(KADO), Dec. 2004

national knowledge resource management system, overhauling legal and institutional systems to move towards a knowledge-based society, and standardizing and developing knowledge and information resources. It also revised the 'Public Knowledge Information Management Act' that entered into force on March 31, 2005 to trigger more active participation by local governments and private experts in the Knowledge Information Resource Administrative Committee, and entrusted the Korea Agency for Digital Opportunity & Promotion (KADO) with the task.

To expand digital information resources, the government decided to digitize information in strategic areas such as science, technology, education, culture and history under the principle of 'Selection and Concentration'. By the end of 2004, 220 million documents scattered across 718 organizations were digitally converted into databases and linked to each other. In 2004, government agencies like the Ministry of Education & Human Resources Development(MOE) and public organizations submitted applications to digitize information for 67 projects. The knowledge resource review working committee reviewed these applications and prioritized them. In the end, 44 projects were selected, and 30 million documents are being built as database(DB).

[Figure 2-2] Knowledge Portal Search/Usage Level



In order to facilitate the dissemination of knowledge, the Korea Knowledge Portal was established in August 2001. The portal offers a one-stop integrated search service in connection with a knowledge portal system. Guidelines were formulated for effective searches and management. The Korea Knowledge Portal provides an integrated search service, value-added service for the introduction and use of available information, and other services such as user analysis, statistics, and management. The hit rate of the DB has drastically increased every year. During the period between 2001 and 2004, the hits of the knowledge portal DB jumped an average of 35% per year.

In a knowledge-based society, national competitiveness is determined by how fast people can share and utilize high-quality information. The nation's knowledge resource management project is meaningful because it aims to share and facilitate the use of knowledge and information.

3. Building Information Society Infrastructures

I. Broadband Convergence Network (BcN)

basic direction

1) Overview

Delivering high-quality multimedia services to end-users requires sufficient bandwidth. It is therefore necessary to continue expanding the bandwidth of subscriber and transport networks while building and operating fixed, wireless and broadcasting networks either privately or closed. However, this might make it difficult to create an array of integrated services and develop new services. It may also cause redundant investment.

2) Implementation plan

The building of the BcN started in 2004 and will finish by 2010.

It is a government/private sector project that consists of three phases:

- Foundation phase (2004 - 2005)
- Commercial deployment phase (2006 - 2007)
- Completion phase (2008 - 2010)

The project covers development of core equipment such as optical transmission switching technology and Fiber To The Home(FTTH) subscriber networks; the building of advanced R&D networks to verify the development of BcN-related technologies and to deliver trial services; upgrading telecommunication networks for QoS; building backbone networks that feature security functions and support new Internet address resources (IPv6); deploying subscriber networks such as FTTH, WiBro and DMB; and building home networks and u-sensor networks. The government also plans to pave the way for growth of new IT sectors such as digital home, intelligent service robot, and next-generation mobile communications by creating a new broadband convergence service market. In doing so, it will enhance efficiency and transparency of the government, private sector, and society. It will greatly improve the nation's innovative spirit and competitiveness.

3) Deployment strategy and methods

To successfully build the BcN, the government has worked with the private sector to develop a roadmap plan. Based on this roadmap, the two sides set out a strategy to build a high-tech R&D network through which they will standardize technologies and services for application to commercial networks.

The BcN is a government-private sector joint initiative to build one of the best networks that will deliver end-to-end high quality service regardless of time, place and terminal.

The government and private sector plan to invest a total of KRW 2.21 trillion to establish the BcN. The private sector will bear the cost of building commercial networks and developing commercial technologies. The government will initially focus on investing in the building and operating of high-tech R&D networks needed to encourage private investment to create a virtuous circle of supply and demand. It will also invest in developing fundamental technologies and conducting BcN pilot projects.

Deploying the BcN

1) Upgrading the BcN

The government plans to develop core technologies such as quality guaranteed switching technology and traffic management technology to build transport networks that can guarantee end-to-end quality of service(QoS) regardless of time, place and terminals. It will also build and operate a quality management system to certify and evaluate QoS such as damages, delay and security while seeking to legislate Service Level Agreements (SLA).

2) Subscriber network with broader bandwidth

In order to provide BcN service subscribers with broadband integrated multimedia services at 50~100Mbps, a plan is underway to transform fixed, wireless, and broadcasting subscriber networks to broadband and digital networks. To transfer fixed subscriber networks to broadband networks, fiber optic cable sections will have to be expanded with the development and application of new technologies such as Hybrid Fiber Coax(HFC) and FTTH. The government will also provide tax benefits and funding to deploy broadband networks by carriers and broadcasters.

3) Building the ubiquitous access environment

The BcN will allow all objects, including information devices and home appliances that are embedded with computers and chips, to have ubiquitous access to networks. The development and standardization of core technologies, such as home gateway and middleware, will be necessary. To create the market, industry, academia, and research institutes will work together to launch pilot projects designed to develop appropriate business models that benefit residential environments.

[Table 2-2] *Deployment Plan of BcN*

(unit : 1,000 persons)

Category		Foundation Phase (2004 ~ 2005)Phase	Commercial Deployment (2006 ~ 2007)	Completion Phase (2008 ~ 2010)
Convergence service(examples)		Fixed-wireless convergence video phones & high-quality VoIP	WiBro, interactive DMB	HD-level, quality-guaranteed multimedia service
Fixed (subscribers)	50~100Mbps	1,200	3,500	6,000
	100Mbps	300	1,000	4,000
	Sub-total	1,500	4,500	10,000
Wireless (Subscribers)	WiBro/ WLAN(50Mbps)	500	3,500	9,500
	4G(100Mbps)	-	-	500
	Sub-total	500	3,500	10,000
Total		2,000	8,000	20,000

Note : These figures exclude the forecasted 30 million subscribers to 3G mobile telecom (2 Mbps-10 Mbps) by 2010.
 Source : Ministry of Information and Communication(MIC), Feb. 2004

II. U-Sensor Network (USN)

In February 2004, the MIC announced its 'Basic Plan for the Building of u-Sensor Network (USN)' to build the ubiquitous information society that integrates information technology with objects. Projects to promote RFID technology and deploy the USN are underway.

Implementation goals & strategy

1) Implementation goals

The MIC hopes to create a u-Life environment by promoting the use of electronic tags. It hopes to create such an environment by 2007 with fixed and wireless broadband Internet infrastructure.

2) Implementation strategy

The MIC plans to establish the Korean USN center within the National Computerization Agency (NCA). The center will support various tasks such as setting out policy on building the national USN, conducting research on legal and institutional systems, launching pilot projects, and engaging in domestic and international cooperation.

Technological development & standardization of RFID/USN

1) Developing RFID/USN technologies

Development is ongoing on common element technologies of RFID tags, readers, transmission, middleware, and service technologies in Korea. Prototype products for 433MHz/900MHz passive-tag and readers are under development in 2004. RFID/USN technologies are component technologies for the core infrastructure of the IT839 Strategy.

2) Standardizing RFID/USN technologies

The USN Standards Forum was set up in April 2004 to cope with international standardization activities and establish domestic standards.

Conducting RFID/USN pilot projects

The following five areas were selected for the RFID/USN pilot projects in July 2004. These areas include the product management system of the Public

Procurement Service (PPS), the ammunition management system of the Ministry of Defense (MOD), the national logistics infrastructure support system of imports and exports of the Ministry of Commerce, Industry & Energy (MOCIE), the baggage tracking & control system of the Korea Airport Corporation (KAC), and the imported beef tracking system of the National Veterinary Research and Quarantine System (NVRQS). Trial services began from August 2004.

III. Next-Generation Internet Protocol (IPv6)

The MIC announced a new 'Plan for Deploying and Promoting IPv6' in September 2003. It later organized the 'IPv6 Strategy Consultation Committee' composed of chief officers from industry, academia, research institutes, and government. In April 2004, the 'Comprehensive Roadmap for Deploying & Promoting IPv6' was finalized and applied to new growth engines projects such as BcN, RFID/USN home networks, and telematics.

Implementation goals & strategy

1) Implementation goals

The government will put in place a supply and demand system of core equipments needed to build Internet networks at home, and will create a profitable business model to promote the introduction of IPv6. Such efforts will likely develop the next-generation of Internet industry and services, and lay the foundation for Korea to take a leap forward from being an Internet consumption country to an Internet production country. In line with this, the government expanded the IPv6 trial network in 2004, plans to embark on commercial service in 2005, and hopes to provide all-IPv6 services from 2010.

To facilitate the use of IPv6, the government intends to introduce IPv6-based equipment in connection with the "Home network deployment pilot project." The home network pilot project targets 1,300 households including ordinary houses and apartments in five regions that include metropolitan areas.

2) Implementation strategy

The government will reflect telecom operators' needs from the planning stage

A major objective of the Korean government is to promote next generation Internet industry and services, which will lay the foundation for a major Internet production country.

by selecting products that fit the domestic Internet environment, developing distinctive functions, and expanding IPv6 equipment and services. It also plans to encourage companies to produce equipment by introducing the IPv6 certificate system to enhance their competitiveness in the global IPv6 market.

Introducing & deploying IPv6

1) Basic plan for introducing & promoting IPv6

As of December 2004, Korea held about 34.23 million IPv4 addresses. With wireless Internet networks and the introduction of Internet-enabled digital home appliances, the demand for IP addresses will explode. Korea is estimated to need some 60 million IP addresses in 2005 and an additional 200 million in 2010. Given these estimates, introducing IPv6 is a priority.

2) Migration from IPv4 to IPv6

The first phase of the IPv6 deployment took place in 2003-2004. IPv4/IPv6 dual-stack routing was applied to access networks and terminals. Isolated IPv6 islands were connected by tunneling IPv6 over IPv4 backbone networks. In the second phase scheduled for 2005-2006, IPv6 will be used to provide most commercial services. This will be done by introducing IPv5/IPv6 dual stacks to backbone networks, access networks, and terminals. In the third phase scheduled for 2007-2010, IPv6-only equipment will be deployed in backbone networks, access networks and terminals.

Developing fixed & wireless integrated commercial technology

1) Next-generation router supporting IPv6

Korea developed an integrated IPv4 and IPv6 access router. This router is a core component of the nation's next-generation Internet backbone network that will be rolled out in 2005. The equipment is expected to accommodate 80,000 VDSL subscribers.

2) IPv6 service technology

Connecting IPv4-based networks to IPv6-based next-generation Internet networks directly requires interworking technologies pursuant to the international standards by the Internet Engineering Task Force (IETF). Each of these IPv4-IPv6 transition technologies have been developed. To integrate them into

one, the IPv4/IPv6 translator toolbox named 6TALK (IPv6 TrAnsLator of Krv6) is under development as a gateway device.

Efforts are underway to develop telecom network management service technologies and advanced service technologies that are differentiated from IPv4-IPv6 transition technologies and existing IPv4 technologies. Primary technical developments in this area include the designing and implementation of multicast technology and IPsec-based VPN functions. Other developments include implementing mobile IPv6 technology, IPv6 network management and Internet address setting/allocation protocol functions, and networks supporting basic functions for service delivery.

4. Safe and Sound Information Society

I. Protection of Infrastructures

Countermeasures against hacking & viruses

1) Security of information and communication networks

Worm and virus attacks on the Internet, which quickly spread around the world, are getting more pervasive, malicious and sophisticated. Such a trend increases the need for international collaboration. In light of this, Korea held the first Korea-China-Japan Information Security Committee in March 2004. The three countries agreed to share information, develop an emergency phone tree, and create mailing groups for information exchanges. By doing so, the three countries laid the foundation for joint actions against Internet incidents. The three countries solidified cooperation even further by regularizing the meeting once a year.

[Table 2-3] *Hacking & Virus Status*

Classification	1999	2000	2001	2002	2003	2004
Hacking	572	1,943	5,333	15,192	26,179	24,297
Computer Virus	39,348	50,124	65,033	38,677	85,023	107,994

Source : Korea Information Security Agency(KISA), Dec. 2004

2) Overhauling legal and institutional systems for information security

The 'Act on Promotion of Information & Communication Network Utilization and Information Protection' entrusts the MIC with the right to tackle Internet incidents. Key service providers may be requested to block access routes, and software developers may be asked to come up with complementary programs that address security vulnerability, and the press may be asked to issue alert and warning signals.

The act was revised on December 30, 2004, to strengthen anti-spam regulation. Under the revised law, those who want to transmit any advertisement through telephones or document facsimiles should receive prior approval from recipients starting from March 31, 2005. To help business operators and recipients understand and comply with the law, the government drew up 'telephone spam prevention guidelines'.

Protecting major information infrastructure facilities

1) Protection system of major information infrastructure facilities

Recognizing that protecting the information infrastructure is key for development and social and economic stability, the government legislated the 'Act on the Protection of Information Infrastructure' on January 26, 2001. The Information Infrastructure Protection Committee was set up in September 2001 under the wing of the Office of Prime Minister to coordinate government policies and plans for protecting major infrastructure facilities. The committee restructured government organizations and systems to carry out the information security strategy by taking concrete measures such as formulating infrastructure protection plans and designating more facilities for protection.

2) Designation criteria for major information infrastructure

Information infrastructure facilities run by national, public and private organizations in the fields of administration, finance and energy have been designated as major facilities to be protected from the risks of cyber attacks.

3) Outlining the protection plans for major information infrastructure facilities

Pursuant to Article 6 of the 'Act on the Protection of Information Infrastructure', heads of the central government agencies responsible for major information

Protecting the information infrastructure is key for development and social and economic stability.

The Korean government continues to take concrete measures to improve the security and reliability of the information infrastructure.

infrastructure facilities should develop and implement plans to protect them.

Implementing the information security audit system

1) Progress report

In 2003, the MIC worked on revising the 'Act on Promotion of Information & Communication Network Utilization and Information Protection' by holding policy discussions, briefing the President of Korea and conducting public hearings to introduce the information security status audit system. This system requires information and communication service providers, whose size is large enough to deal a harsh blow to society in case of Internet breakdown, to receive a mandatory audit that assesses the safety status on their information security. The revised act was promulgated on January 29, 2004. As a result, the government was able to replace old, symbolic security measures from 2000 with practical ones. Along with this, its enforcement decree and enforcement regulations took effect on July 30, 2004, six months after the promulgation of the revised act because of the need to have complementary subordinate laws and regulations.

2) Overview of the information security audit system

Major fixed and wireless ISPs who provide network access services, such as KT and SKT, are subject to this system. Since ISPs are operating information and communication networks by themselves, the level of their information security determines Korea's entire information and communication network security level.

Operators who run the business of agglomerated information and communication facilities for other persons who provide information and communication services are also subject to this audit.

A third group of entities subject to the audit system are Internet services that the general public use such as online shopping malls, search portals and Internet games. Internet businesses' growing popularity are having a greater effect on the people at large. Tightened information security is therefore necessary because Internet breakdowns would cause economic damages to service users. There is also the need to prevent identity theft.

3) Need for outlining information security strategy

Under the ubiquitous computing environment, the following represent threats

to information security:

- Threats that existed in individual networks that can spread to the entire BcN network;
- Identity theft and the risk of privacy infringement as enormous amount of personal data can be collected through various channels such as the u-sensor network or home network;
- With the current identification system, it is impossible to provide a variety of digital identification functions required for items such as sensors, information home appliances, and electronic tags (RFID) in this ubiquitous environment;
- Interconnecting household items through networks in the ubiquitous environment increases the threat of cyber attack threats in our daily lives.

To prepare for possible and actual threats against information security, the government realizes the need to set up an information security system at the national level and formulate a relevant strategy. It is currently drawing up the 'Basic Strategy for Mid- and Long-term Information Security'.

II. Environment for Sound Information Use

Establishing information ethics

1) Creating a sound cyber environment

Since 2003, the government has staged the 'e-Clean Korea' campaign. This campaign targets all people in Korea to forge sound 'netiquette'. Netiquette refers to sound etiquette by Netizens(Korean word for Internet users), with a goal of uprooting harmful Internet sites. 'e-Clean Korea' began with a promulgation ceremony and commemorative event on June 5, 2004. The campaign aims to create a sound environment for Internet use with the participation of members from the government, society, families and schools. To promote this campaign, the government held forums and workshops, and published its 'White Paper on IT Ethics', a systematic and comprehensive guideline for IT ethics.

Juvenile protection activities

1) Creating a sound Internet environment for the youth

The government has in place the legal and institutional framework to protect youth by revising the 'Act on Promotion of Information & Communication

The Korean government has in place legal and institutional frameworks to protect individual privacy and rights on the Internet

Network Utilization and Information Protection'. The Act requires self-regulation of providers. To sort out and block illegal and harmful information, the government extends its full support to technological development by relevant business operators. In addition, it conducted the 'e-Clean Korea 2004' and 'e-Clean Home' campaigns to create a sound Internet environment and increase people's interest.

The government set up 'Juvenile Department' in September 2004 under the wing of the 'Anti-spam Task Force Commission' with two priorities. The first is to protect youth from harmful sites and the second is to forge a close collaborative system with relevant organizations in urgent situations. The 'Anti-spam Task Force Commission' consists of both private sector and government officials.

2) Enhancing self-regulation through education and campaigns

The government focused on providing the youth with IT ethics education to raise awareness and encourage sound use of the Internet. In addition, it is educating youth protectors such as parents and teachers how to protect their children or students from the harmful influence of the Internet.

Personal information protection

1) Rule on the protection of personal information over Internet sites

The 'Act on Promotion of Information & Communication Network Utilization and Information Protection' specifies that service providers, who intend to collect personal information from a user, notify the person of the following five facts and obtain his consent in advance: 1.Information of the person in charge of managing the personal information 2.The objective of gathering and using the personal information 3.The period of using and retaining the personal information 4.Ways of withdrawing his agreement (membership cancellation) on the use of personal information 5.Viewing and correcting personal information.

The government is working to develop technology and institutional systems to prepare for new risks of the ubiquitous society through the 'Mid & Long-term Strategy for Information Protection'. It is also researching ways to improve privacy protection systems such as the 'Digital Signature Certification' system, which was designed to secure the credibility of next-generation digital identifi-

A sound practice of information ethics depends on the participation of government, society, families and schools.

cation systems and facilitate their use.

Strengthening anti-spam drive

1) Spam mail

To protect people from the barrage of spam mail and to foster a sound e-mail usage environment, the government set up the 'Anti-spam Center' within the Korea Information Security Agency (KISA). The center offers counseling services to people on how to block spam or how to cope with illegal spam through the Internet (<http://www.spamcop.or.kr>), telephone, fax and mail. The Center also investigates illegal spam activities. Based on the results of the investigation, the Center either counsels spammers, enquires the MIC to take administrative measures, or legally charges spammers.

Resolving spam mail problems is a joint government-private sector effort in Korea.

2) Anti-spam policy

Resolving spam mail problems require efforts by the government (legal regulation) and the private sector (self-regulation), both singly and jointly. The government launched the 'Anti-spam Task Force Commission' comprising representatives from both sectors under the leadership of the Vice Minister of MIC in June 2003.

The commission had a total of three meetings by April 2004 to ponder comprehensive measures against spam. In-depth discussions took place during the third meeting on ways to decrease spam by 50% by the end of 2004. The commission also came up with technical measures from the time spam is sent to the time the user receives it. It also presented awareness-raising activities and suggested ways to further international collaboration.

[Table 2-4] *Average Daily Spam*

Classification	(unit : email)			
	2001	2002	2003	2004
Spam Mail per Day	4.7	34.9	28.8	13.8

Source : Korea Information Security Agency(KISA), Dec. 2004

III. Nurturing the Information Security Industry

Development & standardization of information security technology

1) Developing information security technology

The MIC has systematically implemented the development of information security technologies based on the 'Five-year Development Plan for Information Security Technology' (2001~2005) set forth in 2001, and the 'Mid & Long-term Basic Plan for Information Security' (2003~2007) established in 2002.

2) Standardization of information security technology

The government supported efforts to develop a standard proposal of information security core technology. The final proposal was eventually adopted as a standard at home and abroad. Korea's information security standards are highly recognized. Eight out of the top 10 highly used IT standards are information security standards. SEED, a 128-bit key block cypher was submitted to the ISO, a standardization body, and is expected to be accepted as an international standard.

Promoting the use of e-Signature

1) Policy and status of users

The number of e-Signature certificate users, which were only 50,000 at the end of 2000, has surged to 9.5 million by the end of December 2004. Its popularity has greatly spread in the financial sector with 6 million e-Signature certificate users in Internet banking, and 1.4 million in online stock trading. Such a sharp rise was unprecedented throughout the world. e-Signature was introduced to public servants and employees of large enterprises in Japan, and public servants in Canada. Except for these countries, other countries have not yet commonly utilized e-Signatures.

Korea boasts the highest increase in the number of e-Signature certificate users in the world.

[Table 2-5] *E-Signature Users*

Classification	(unit : 1,000 persons)				
	2000	2001	2002	2003	2004
Users	52	1,917	5,772	8,713	9,498

Source : Korea Information Security Agency(KISA), Dec. 2004

The Korean government is taking steps to ensure interoperability of e-Signatures.

2) Pursuing interoperability of e-Signatures

As a first step, the Korea Information Security Agency (KISA) and working-level officials of each certificate authority organized a working group to ensure interoperability among those authorized certification bodies in April 2000. Since then, they worked together to develop technical standards and conduct cross-tests to ensure interoperability.

In the second phase, which began in 2001, they focused on improving the user interface of application programs, so that users can use certificate services more conveniently. Such efforts paid off when they completed the development of user interface technical specifications.

Since September 2002, respective certificate authorities have completed the development of their certificate module in accordance with technical specifications of interoperability, and started replacing the existing ones installed in electronic transaction partners such as banks with a new certificate module. In February 2004, the MIC, KISA, and nationally certified certificate authorities carried out fact-finding investigations into the interoperability status of e-Signatures.

3) Building wireless Public Key Infrastructure (PKI) system

The MIC set up a technical requirements committee led by KISA in August 2000 to develop wireless PKI technical requirements and standards. The committee has developed four types of PKI technical requirements and 11 types of technical specifications. In March 2004, it established and revised four kinds of technical specifications to secure the safety of wireless certificate systems.

4) Inter-governmental cross certified e-Signature

Another joint project between the MIC and KISA has been the inter-governmental e-Signature cross certificate since 2000. Efforts continue to develop cross certificate-related technologies such as certificate path verification, server-based certificate verification, certificate management, cross certificate guideline, and a common interface for PKI clients. The MIC signed an MOU with Japan, Singapore and Taiwan in June 2001 to develop e-Signature interoperability. The parties then set up a test-bed and successfully completed the interoperability experiment by December 2002. Through such collaborative

efforts, the four countries were able to ensure interoperability on most technical issues of e-Signature certificate.

Operating the Korea Information Security Industry Support Center (KISIS)

1) Major Operations

Most information security companies in Korea are small and lack certain resources. To assist them, the government created and now operates the Korea Information Security Industry Support Center (KISIS) within KISA. The center runs a test lab where information security companies can conduct performance tests of their products. It also built biometric recognition DB and support those companies' entry into the overseas market.

2) Major responsibilities

Using government funds, KISIS purchased performance test equipment that small information security companies can not afford, and installed it within its test lab in October 2001 to make it available to information security product developers anytime.

Evaluation & certification guidelines of the information security system

The government notified the public of evaluation and certification guidelines of the information security system in 1998 pursuant to Article 15 of the 'Framework Act on Informatization Promotion'. It aims to create a safe and reliable IT environment, secure international competitiveness of Korean information security products, and support information security companies. This move paved the way for delivering information security products verified by both the government and the private sector.

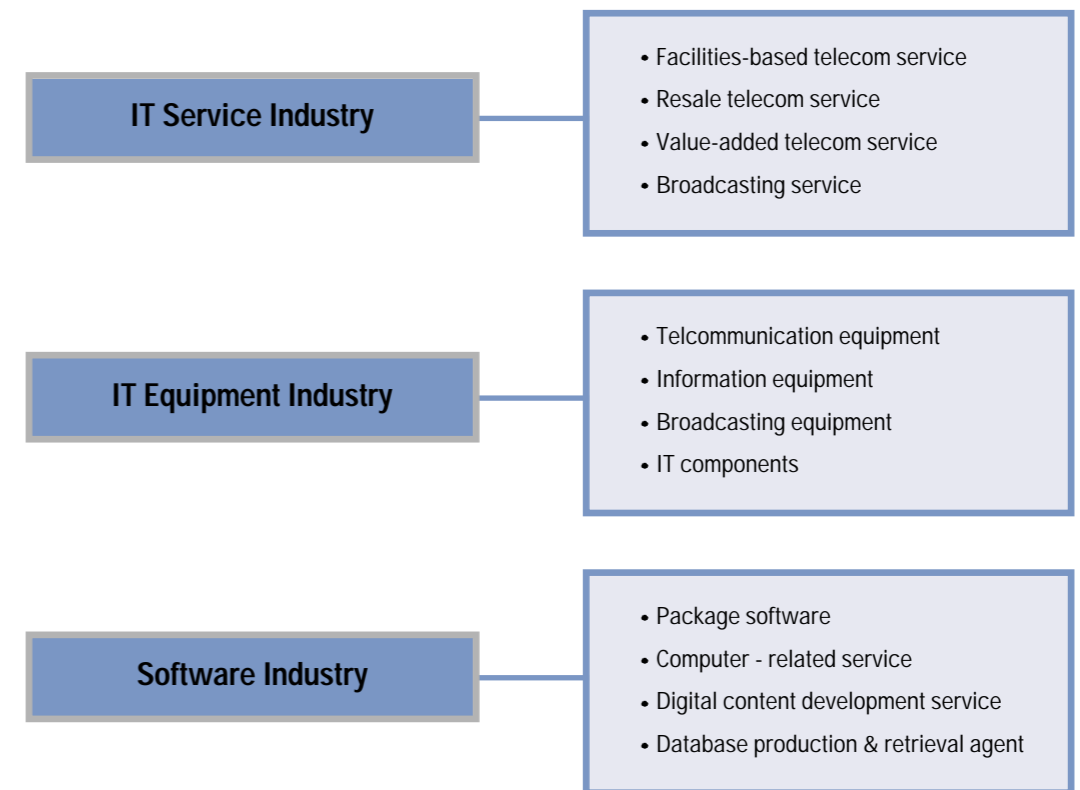
IT Industry Policy

1. IT Industry Trends

Under the unified classification system of the MIC, the Korean IT industry is classified into three main segments: IT service, IT equipment, and software. The classification system was first outlined in 1994 followed by a partial revision in 1997. In 2002, it was revised again to reflect the trend in technology evolution and changes in the IT environment.

The Korean IT industry defined in [Table 3-1] has grown to represent 29.4% of total exports (USD 74.7 billion out of USD 253.8 billion in 2004). Within a relatively short period of 20 years, it has positioned itself as a key driver of economic growth.

[Figure 3-1] *Classification of the IT Industry*



[Table 3-1] *Size of the Korean IT Industry*

(unit : Production, Domestic Sales-KRW 1Billion, import & export, trade balance-USD 1Million)

Category	1999	2000	2001	2002	2003	2004(P)
Production	117,836	148,215	150,147	188,152	201,623	225,915
Domestic Sales	101,875	130,433	136,409	171,447	176,670	189,875
Export	39,958	51,199	38,553	46,271	57,361	74,626
Import	26,539	35,472	27,918	30,851	36,426	40,781
Trade Balance	13,418	15,728	10,635	15,196	20,935	33,845

Note : 'Import' & 'Export', 'Trade Balance' are final estimates | (P)=Preliminary estimates

Source : Korea Association of Information & Telecommunication(KAIT), 2004

I. IT Service Industry

In 2004, the IT service market was stagnant due to subscriber saturation and tariff reduction in the facilities-based telecom sector. Because of growth in the value-added telecom service sector, revenue has grown slightly 3.2% from KRW 41.6 trillion in 2003 to KRW 42.9 trillion .

Korea's fixed-line telecom service market has shrunk due to shifting service demand from fixed to wireless networks, and due to fierce competition among carriers.

The sales revenue in facilities-based telecom services reached KRW 30 trillion in 2004, representing an increase of 3.7% compared to a year earlier. The fixed-line telecom service market has shrunk due to shifting service demand from fixed networks to wireless networks and fierce competition among carriers. As a result, sales revenue fell 2.3% to KRW 13.32 trillion in 2004 over a year earlier. Growing demand for mobile data communication and wireless Trunked Radio Service (TRS) fueled the sales growth of the wireless telecom segment. Its sales increased by 5.9% to KRW 16.13 trillion in 2004 over a year.

The sales revenue in resale telecom services showed a sharp annual rise until 2002. But, its sales revenue dropped in 2003, and remained constant in 2004 at KRW 1.3 trillion, showing no signs of backtrack.

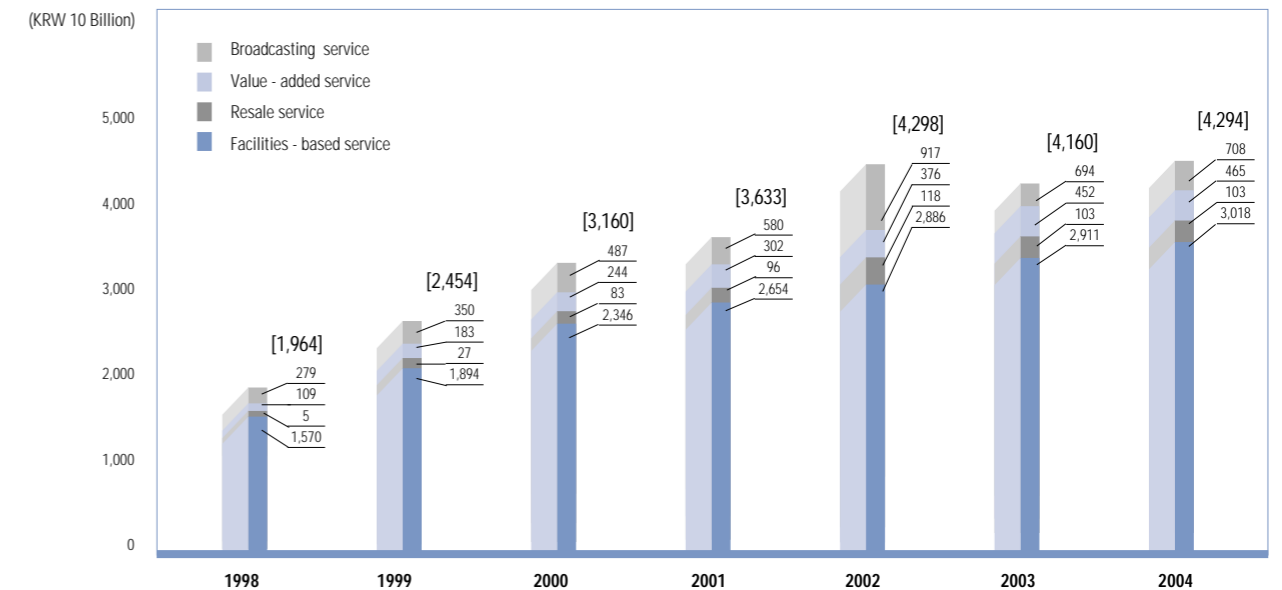
The market size in value-added telecom service in Korea reached KRW 4.65 trillion in 2004. This represents an increase of 2.9% from 2003. While the sales revenue of network services went down 9.3% to KRW 462 billion year-on-year, the

revenue in value-added application services surged to KRW 2.58 trillion, an increase of 25.9% in 2004 from the previous year.

Sales revenue in the broadcasting service market showed a 2.0% increase at KRW 7.8 trillion over the previous year. It was largely affected by a drastic 20.7% year-on-year decline in terrestrial broadcasting service revenue. The economic slowdown triggered sluggish TV commercial sales, and consequently, terrestrial broadcasting service registered a poor performance with KRW 2.85 trillion in revenue.

The number of IT service subscribers in 2004 [Table 3-2] was on the rise in the facilities-based telecom and broadcasting service sectors. Cellular and PCS services, as well as broadband Internet access, contributed to the growing subscriber base in facilities-based services while fixed TV services contributed to an increasing subscription ratio in the broadcasting service.

[Figure 3-2] *Yearly Sales Revenue of the IT Service Sector*



Note: [] is total revenue. (The sub-total of each service was rounded off.)

Source : Korea Association of Information & Telecommunication(KAIT), 2004

IT Industry Trends

New IT Growth Engines

IT R&D and International Standardization Activities

Facilitating the Growth of IT SMEs and Venture Companies

[Table 3-2] *Number of IT Service Subscribers Per Year*

Year	2000	2001	2002	2003	2004
Facilities-based Telecom Service	57,955	71,279	103,273	110,959	118,178
Resale Telecom Service	1,332	1,729	2,325	2,423	2,423
Value-added Telecom Service	50,136	55,120	54,500	53,202	69,497
Broadcasting Service	9,992	10,326	11,435	12,548	12,552

Source : Korea Association of Information & Telecommunication(KAIT), 2004

II. IT Equipment Industry

The IT equipment industry achieved sound growth in 2004 compared to the previous year because of increased shipments to China and enhanced competitiveness of key export items like mobile phones, semiconductors, LCD monitors, and digital TVs.

The production of the IT equipment market registered a 16% growth rate to reach KRW 164.27 trillion. Domestic sales increased about 27.48% to KRW 148.15 trillion. Exports stood at USD 74.2 billion, up 29.82%. Import volume rose 12.32% and was valued at USD 40.3 billion. As a result, the trade balance of the IT equipment industry amounted to USD 33.9 billion with a 59.33% increase year-on-year.

III. Software Industry

Domestic software production in 2004 increased only 1.6% from 2003 to KRW 18.73 trillion. This was due to negative growth in computer-related and digital contents development services. These services were adversely affected by shrinking IT investment and consumer demand. However, the software industry enjoyed 110.7% growth in exports, recording USD 413 million thanks to strong demand from China and Southeast Asia.

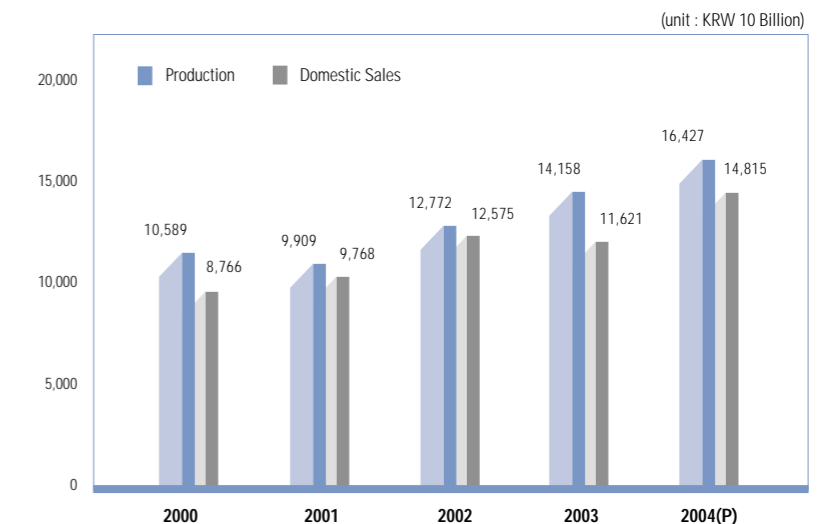
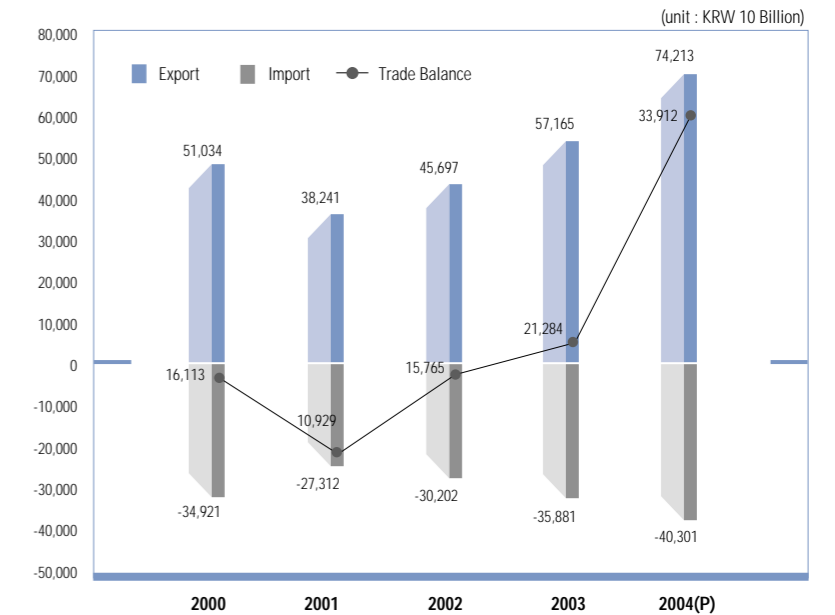
IT Industry Trends

New IT Growth Engines

IT R&D and International Standardization Activities

Facilitating the Growth of IT SMEs and Venture Companies

[Figure 3-3] *Size of the IT Equipment Industry Per Year*



Note : (P) = Preliminary Estimates

Source : Korea Association of Information & Telecommunication(KAIT), 2004

I. Next-Generation Mobile Communications

Next-generation mobile communications is a technology that enables transmission of a wide array of high-quality multimedia information at high-speeds to standstill users or those on the move using mobile and satellite communication networks. It is a comprehensive concept that encompasses an upgraded IMT-2000 service, WiBro service, broadband wireless LAN and next-generation mobile access technology.

The next-generation mobile technology will enable high-quality, high-speed multimedia transmission of all kinds and type; Korea hopes to secure the world's best mobile communications technologies by 2007

Korea will develop a 30Mbps WiBro service and a 50Mbps WiBro service using smart antenna technology. At the same time, industry and research institutes will work together to develop wireless transmission technology for 3G Evolution and technologies for base stations and terminals. In doing so, Korea plans to secure the world's best mobile communications technologies by 2007.

Korea also plans to develop High-Speed Downlink Packet Access(HSDPA) Time Division Duplex(TDD) prototypes for use in hot spots as a dual mode of the HSDPA Frequency Division Duplex(FDD) system by 2006. It will also develop components for next-generation portable handheld devices to deliver user-friendly multimedia services by 2005. Development will also commence on prototypes of low-power Radio Frequency Intergrated Circuits(RFIC) solutions for portable handheld devices, RF Micro Electro Mechanical Systems(MEMS) duplexers, switch elements, and wireless security chip sets. Development will proceed according to lego-style open technology with plug and play capabilities.

II. Digital TV & Digital Broadcasting

Korea aims to become one of the world's best digital broadcasting nation and provide the highest-quality, cutting-edge services anytime, anywhere, with any devices. The nation aims to expand coverage of terrestrial DTV services across cities and towns by 2005, and start nationwide terrestrial DTV broadcasting services in 2006. DMB technology is designed to offer voice, video and data services on the move. One-way DMB transmission and terminal systems will be available by 2004 with the goal of commercializing interactive DMB transmission and terminal systems by the end of 2006.

Korea aims to become one of the world's best digital broadcasting nation and provide the highest-quality, cutting-edge services anytime, anywhere, with any devices.

By using Korea's 12 million cable subscribers, Korea plans to make converged telecommunication and broadcasting services, as well as T-Government by jointly developing giga-class cable transmission and reception technology with foreign institutes and lead efforts to set international standards in this field. In addition, it will develop new digital TV services and provide trial services to establish technical standards at an early stage, thereby creating synergistic effects between broadcasters and the broadcasting-related industry. Korea strives to take a lead in international standard setting by developing leading technologies such as digital cinema and realistic broadcasting, and securing core IPRs to maintain competitiveness in the future digital TV market and secure source technologies.

In the field of personalized broadcasting, Korea seeks to facilitate the use of DMB terminal technology by introducing mobile multimedia broadcasting services, and to develop mobile interactive multimedia services that are related to telematics technology. To take a leading position in DMB services, it is essential for Korea to secure DMB standards and source IPRs. Future plans call for holding terrestrial DMB international forums, launching trial services to publicize its available technologies, and encouraging efforts to create international standards. Increasing production of High Definition(HD) contents and programs will result in expansion of the domestic DMB market.

III. Home Network

Korea aspires to be a world leader in building home networks. To do so, Korea will make best use of its existing digital TV and broadband Internet networks to pursue a comprehensive technological development that combines three elements; internal home networks, external networks that deliver services to the home, and contents and solutions that realize home digital service.

It will also instill enthusiasm for technological development by SMEs and start-ups with home network related technical specialties such as contents and solution developers by expanding R&D support for them. With early development of core products like home servers, the Korean home network industry is expected to create KRW 85 trillion and 24,000 jobs for the Korean economy by 2010.

IV. IT SoC

IT SoC is a key component of IT devices. It is composed of memory that stores information, one or more processing units that control and process digital and analog signals, and related softwares. Korea set a goal to become a leading IT SoC country by 2007.

Korea aims to become a leading IT SoC country, and supports the development of core SoC technologies.

To achieve this, the government identified core SoC technologies as a new growth engine sector and supported such development. As a result, it succeeded in developing multimedia SoCs for cellular phones in 2004. It also produced 123 high-quality SoC designers who completed a specialty certificate program in the IT SoC Academy, which opened in February 2004. The government has also supported the building of a common infrastructure for SoC design companies. As a result, two mid-sized companies with more than KRW 100 billion emerged. The IT SoC industry is showing considerable growth every year.

In 2005, the government will support SoC design companies by expanding Intellectual Property (IP) databases and production of prototypes. Branch campuses of the IT SoC will open across the nation in an attempt to produce talented SoC designers nationwide. The government will develop and demonstrate low-power core chips for mobile communications and hold IT SoC exhibitions to introduce new products and promote cooperation between system developers at home and abroad.

V. Next-generation PC

Next-generation PCs are central in the ubiquitous computing environment. Not only is it user-centered and easy to use, but also meets the requests of users at any time and place with its wearable and portable computing functions. Korea will strive for the goal to “become one of the top three advanced countries in the world, to lead the ubiquitous era for next-generation PCs”. Consistent with this goal, it is moving on to the age of wearable, edible, and embedded computing.

Korea will secure five-sense information User Interface(UI), bio-integrated

Korea is striving to be one of the top three advanced countries in the next-generation PC field as they are central to the ubiquitous computing environment.

technology by importing technology and encouraging international joint research. Smart I/O and software technologies will be promoted through international exchanges of developed home-grown technology and support to domestic industry. Korea will focus on the development of wearable computer and next-generation human interfaces by maximizing the use of its network infrastructure. The technology will be applied to differentiate a wide array of products to enhance consumer convenience.

In the future, Korea will explore applications adopting bio-technology to develop various micro-product models using a single chip and thus, create a new market. It is essential for the next-generation PC industry to develop utilization models that will help secure them a firm footing and enhance their national competitiveness. The government plans to assist the industry by developing various utilization scenarios centering around main PC user groups and reflect these scenarios in technical development. It also plans to apply developed technologies and utilization scenarios to pilot projects on college campuses and in the retail industry to get a head start in developing the next-generation PC market. The government will hold next-generation PC industrial exhibitions as well as wearable computer fashion shows to give people a preview into the ubiquitous lifestyle and enhance the popularity of next-generation PCs.

VI. Embedded S/W

The government put forward its vision to realize the “Embedded, Everywhere” nation by continuously developing embedded S/W core technologies and fostering the embedded software industry. Part of the vision also has Korea growing into one of the world’s two major embedded S/W producers by providing embedded S/W solutions into platforms that can be used to develop products of various sizes and in every product line.

Embedded S/W is an engine for various information devices, particularly those in the next-generation sectors. Initially, embedded S/W platforms will be developed taking into account the technical requirements of smart phones, mobile communications, robots, digital broadcasting, digital homes, and telematics. For this purpose, the government devised mid and long-term plans to develop three

types of embedded S/W platforms (standard, micro, nano) depending on the features and sizes of the embedded systems. In addition, it will secure four solutions (for mobile devices, information devices, sensor devices and industrial devices) with an eye to the application sector. Developed embedded S/W platforms and solutions will be widely used, not only for pilot projects of the next-generation growth engine scheme, but also for the purpose of environmental protection and disaster prevention.

To realize the vision of the embedded S/W industry and to achieve the government's mid and long-term goals, the government will support the development of embedded S/W core technologies and strengthen competitiveness by securing source technologies, providing technical support and promoting international cooperation. In a bid to establish embedded S/W platform standards, the Embedded S/W Industry Committee will lead domestic efforts while Korea, China and Japan are closely working together to adopt tri-country common standards. The government also works hard to produce high-quality embedded S/W engineers with architect-level skills through the development of six-track education kits.

VII. S/W Solution & Digital Contents

The digital contents and S/W solution industry is an industry that improves on the emerging digital convergence network environment and enhances the utilization and values of ubiquitous devices such as robots, telematics and DTVs. In order to develop the nation into one of the five major digital content countries by 2007, the Korean government aims to secure digital content production technology. With regard to the S/W solution industry, Korea hopes to transform itself from S/W consumer to S/W producer with a goal of becoming one of the world's three major countries by 2007.

The government selected and focused on areas of strategic technology development, and established global cooperation by expanding international joint research and attracting foreign R&D centers. To maximize the outcome of projects, the government will influence market conditions and needs, strengthen support for corporate commercialization, and develop human resources.

With the objective of becoming one of the five major digital content countries, the Korean government encourages the development of digital content production technology.

Key research that took place in the digital contents field in 2004 included digital actor technology designed to support high-quality digital video production, game engines which are compatible between PC and PS2, and DRM-related technology that aims to protect digital contents and IPRs. In the S/W solution sector, the government stimulated the development of voice-recognition interfaces, which can be utilized in intelligent robots and telematics.

VIII. Telematics

The government plans, by 2007, to turn vehicles into a third cyber-space, delivering convenience for drivers, entertainment for passengers, and safety for the vehicles. By 2005, the government will establish indoor and outdoor test-beds to test for all kinds of telematics equipment. It set 2006 as the target year to secure three core technologies in terminals, servers, and wireless access for telematics.

To become a global telematics leader, Korea will systematically gather and provide information on traffic, road-maps and tourism while lowering telematics terminal prices and service usage rates. Local governments, research institutes, and private companies will divide their roles to conduct nine core projects designed to establish the telematics market. To trigger demand for telematics service, the government plans to set up a 'telematics service pilot city' in areas like Jeju island.

VIII. Intelligent Service Robots

The new intelligent service robot industry no longer perceives robots as labor to replace humans, but to provide entertainment and to serve as companions. The global intelligent service robot market is projected to grow to USD 4.9 billion in 2007 and USD 23.1 billion in 2010 (IDC, Dec. 2004). The market for intelligent service robots remains vastly untapped, but is expected to grow. Hence, under the national interest governments in advanced countries including the U.S., Japan and Europ are focusing into technology, research and developments.

The Korean government supports the development of core technologies in terminals, servers, and wireless access for telematics.

The government aspires to become one of the world's three largest intelligent robot makers by developing and industrializing intelligent service robot technologies. In particular, the MIC intends to promote the technological developments in Ubiquitous Robotic Companion(URC), which integrates advanced IT infrastructures with the robot technology, to build "robots that are capable of providing my services anywhere anytime." The trial service for URC will begin from the end of 2005.

3. IT R&D and International Standardization Activities

I. Innovating and Enhancing R&D Systems

In 2004, the government introduced Project Managers(PMs), private experts for each new growth engine sector, and a Planning Evaluation Commercialization & Marketing(PECoM) system that can standardize and manage the entire R&D process. Such a move aims to shift IT R&D into a performance-based system.

The Korean government aims to shift R&D in information technology in the direction of a performance-based system.

PMs manage the entire process of the project from planning to commercialization. Such a system can promise more successful R&D results and increase synergistic effects between the government and the private sector by reflecting technical demands by the private sector on government policy. With that in mind, PMs set out development strategy for IT growth engines and the master plan, identify new projects and pursue goal-oriented technological development.

The PECoM system was first developed as a stand-alone so that it can be used in a computer system as early as possible. In the next stage, the government plans to make the system compatible with other systems to ensure functionality of the system and efficient use. The focus of the PECoM system will expand from progress management to the overall process of project planning, evaluation, and follow-up. PMs' regular reviews on milestone accomplishments will be reflected in yearly project evaluations to manage performance in R&D activities. The government will continuously work to improve the R&D system to enhance expertise and transparency in selecting and assessing R&D projects.

Korea will continue to engage in international joint research to develop core source technologies by attracting advanced foreign R&D centers from the global companies like IBM, Fraunhofer and Intel. It will step up international joint research efforts by attracting more R&D centers from renowned foreign companies like HP and Agilent in 2005.

In the meantime, the government has selected strategic areas for human resource development with the focus on element technologies, the common basis for new IT growth engine sectors. Also the government applied Supply Chain Management(SCM) to produce highly-qualified IT talents that can meet market demands. The SCM model will be more widely adopted to nurture IT human resources. The government plans to bring in qualitative changes in IT education in colleges by integrating the SCM model into college curriculums and human resource development projects.

II. International Standardization Activities

The government has actively engaged in standardization activities by adopting more international standards through IT standardization projects and by participating in activities of international standardization organizations. Its role on core IT technologies in international standards has been passive, so it will strengthen strategic alliances for international standardization, and intensely support the development of draft standards to secure its footing as a proposer of international standards.

Specifically, Korea will solidify its strategic alliance by hosting international standardization conferences such as the Korea-China-Japan Standard Cooperation meeting and the Internet Engineering Task Force(IETF) meeting. The government will support IT products to hit the market in time by easing certificate regulations and concluding Mutual Recognition Agreement(MRAs) while expanding its support for testing and certification of IT products such as GSM handsets.

I. IT SMEs & Venture Companies

IT SMEs and start-ups are on an upward trend. In 2004, they accounted for 20,259 or 98.6% of total IT businesses. In the same year, IT SMEs saw its production rise 16.9% to KRW 61.7 trillion from the previous year, with exports jumping by 27% to USD 10.82 billion.

II. Fostering IT SMEs & Venture Companies

The Korean government has made efforts to create greater IT demand with the aim of helping SMEs and venture companies to overcome their current difficulties.

The government makes vigorous efforts to create IT demand in the hope that IT SMEs and venture companies can resolve their current difficulties and grow by themselves. It also implements policies specific for SMEs such as creating a sound environment, strengthening technical competitiveness, and encouraging development.

Creating demand through the 'IT839 Strategy'

In order to create new growth engines through the 'IT839 Strategy', the government is pushing ahead with comprehensive measures that will encompass service-infrastructure-manufacturing (device & S/W). Smooth implementation of the IT839 strategy would greatly contribute to the triggering of market demand for SMEs. Game developers and SI companies will be given unwavering support for their global marketing efforts. The government will provide information on overseas markets, support participation in exhibitions, and assist in forging networks with local companies. The government plans to assist SI businesses overseas by expanding its Economic Development & Cooperation Fund(EDCF) support.

Creating a sound eco-system of IT companies

The government will build an evaluation system to measure technical competence of IT SMEs and venture companies in order to create a sound environment. To begin with, the government will reinforce the functions of IT Transfer & Evaluation Center (ITEC) within Electronics & Telecommunications Research Institute(ETRI) to expand the limited scope of technical evaluation to include the areas of technology transfer and investment.

It is necessary to vitalize M&A by building a growth and exit system for IT

SMEs and start-up companies and preventing outstanding technologies and human resources from being underutilized. To do so, the government will operate a focus group to forge a voluntary M&A basis for the industry. It also plans to ease regulations that hinder the promotion of M&A, such as merger review conditions, while supporting cooperation between IT SMEs and venture companies in an attempt to save costs through economies of scale in purchase and marketing.

Strengthening the technical competitiveness of IT companies

The government will focus policy on IT business creation, growth, and restructuring, so that companies can develop into large companies through Korea Securities Dealers Automated Quotation(KOSDAQ). It pushes forward policies to develop production facility shared services and support R&D for mid and small-sized IT companies. The government also supports policies to improve tax and institutional systems and set up organizations that deal with information on corporate credibility. It does so by working with relevant agencies such as the Ministry of Finance & Economy(MOFE) and the Small & Medium Business Administration (SMBA).

Telecom Service Policy

1. Telecom Service Trends

I. Telecom Service Policy

The Korean telecom service market has grown remarkably thanks to greater competition in the telecom services sector.

The Korean telecom service market has grown remarkably thanks to CDMA commercialization in the mid-1990s and introduction of competition in the telecom services sector. Nevertheless growth in sales revenues have stagnated due to continuous reductions of carriers' tariffs and early market saturation of major telecom services such as broadband Internet and mobile communications. In response, the government revised competition policy and implemented policies to enhance user convenience. It has plans to introduce new services such as WiBro and telematics while bolstering existing services such as W-CDMA and Internet telephony (VoIP) to vitalize the telecom market which has entered a mature stage. The government's recent achievements can be summed up as follows.

First, the government formulated a licensing policy for WiBro services by selecting three competitive operators regardless of whether they provide fixed or wireless services. The government also established the Telematics Information Center(TELIC) to integrate and provide telematics-related information to the public and private sectors. A pilot project was also launched on Jeju island to raise awareness about telematics service and create a new demand base. Moreover, the government approved subsidies on terminals to facilitate W-CDMA service, and confirmed carriers' plans for investment and yearly service provision. It also included Internet telephony as a new telecom service and provided called numbers to boost Internet telephony service.

Second, the government pushed ahead with detailed projects consistent with the 'Telecom Market Competition Policy' that was set out in July 2003. It evaluated the current status of market competition and changed calculation formulas for interconnection charges.

Third, the government expanded the application of number portability for local and mobile phones, established the 'Act on the Protection and Utilization of Location-based Information', and built a telecom disaster management system. Such measures enhanced the convenience of telecom service users, created a sound service use environment, and provided reliable telecom services. Local phone number portability was introduced to 21 competitive telecom service

areas such as Seoul, Busan, and Gwangju based on replacement timing of switches. Mobile phone number portability was introduced with a time-difference in the following order: SKT(Jan. 1, 2004) → KTF(Jul. 1, 2004) → LGT(Jan. 1, 2005). Furthermore, the government carried out a two-year project to build the telecom disaster management system and a DB. It completed its project for Seoul in the first year and nationwide in the second year.

II. Telecom Operators

Facilities-based telecom operators (As of March 31, 2005)

[Table 4-1] *Facilities-based Telecom Operators*

Service	Coverage	No. of Operators	Operators	
Local Call	Nationwide	3	KT, Hanaro Telecom, Dacom	
	Value-added Service	1	Onse Telecom	
Long-distance Call	Nationwide	5	KT, Hanaro Telecom, Dacom, Onse Telecom, SK Telink	
International Call	Nationwide	5	KT, Hanaro Telecom, Dacom, Onse Telecom, SK Telink	
Call Services by Leasing Lines and Facilities	Domestic/International	5	KT, Hanaro Telecom, Dacom, Enterprise Networks, Eastset	
	Domestic	3	Powercomm, SK Networks, Dreamline	
	Long-distance/International	3	SK Telecom, Hansol i-Glove, Onse Telecom	
	International	5	Dacom Crossing, Seoul International Call, Samsung Networks, Daehan Reach, Iljin C2C	
Internet Access Service	Nationwide	8	KT, Hanaro Telecom, Dacom, Onse Telecom, Enterprise Networks, Dreamline, SK Networks, Thrunet	
Frequencies -allocated Service	Mobile Phone(Cellular)	Nationwide	1	SK Telecom
	Mobile Phone(PCS)	Nationwide	2	LG Telecom, KT Freetel
	Satellite Portable/Data Communications(GMPCS)	Nationwide	2	Dacom, Korea Orbcomm Limited
	TRS	Nationwide	1	KT Powertel
		Nationwide	5	Seoul TRS(Metropolitan area), KB Telecom (Busan and Gyeongnam), YEN(Daegu & Gyeongbuk), Powertel TRS (Gangwon), Jeju TRS (Jeju)

Total number of operators stood at 34 (Operators who provide multiple services were calculated as one operator).

[Table 4-1] *Facilities-based Telecom Operators*

Service	Coverage	No. of Operators	Operators	
Frequencies -allocated Service	Wireless Pager Service	Nationwide	1	Real Telecom
		Regional	3	Seoul Mobile Telecom (Metropolitan area), Eyesvision (Pusan & Kyeongnam), Centis (Daejeon & Chungnam)
Service	Wireless Data Communications	Nationwide	3	Air Media, Real Telecom, Hanse Telecom
	Broadband Wireless Internet	Nationwide	1	Dacom
	IMT-2000	Nationwide	3	SK Telecom, LG Telecom, KT Freetel
	Satellite Link Lease Service	Nationwide	1	SK Telecom
	Location-based Service	Nationwide	1	Korea Location Information Company
	WiBro Service	Nationwide	2	KT, SK Telecom

Total number of operators stood at 34 (Operators who provide multiple services were calculated as one operator).

Resale telecom operators

In Korea, resale telecom operators are classified into those who lease facilities from facilities-based operators and provide facilities-based telecom services (Category 1 & Category 2) and those who deploy in-plant facilities at the customer's premise to provide telecom services using their own independent in-plant facilities (Category 3).

Depending on whether they have their own facilities and the types of services they deliver, resale category 1 operators provide services like voice resale, Internet telephony and call back. Resale category 2 operators provide aggregation, rebilling and Internet telephony. Resale category 3 operators provide in-building communications service. To make it easier to enter such businesses, the government requires operators only to register when they want to start resale category telecom businesses.

Value-added telecom operators

Value-added telecom service refers to businesses in which operators are leasing lines from facilities-based operators or using a mix of their own lines and leased lines to provide various value-added services. Such service includes circuit switched network, code conversion, telecom speed conversion, amassment and

transmission of information, media conversion, computation processing, and database-based delivery of information. Value-added telecom service combines a transmission function, a basic telecom service, and computation functionality.

Value-added telecom operators need only to report to the government before providing a wide array of value added telecom services such as data network service, value added network(VAN) service, online information processing, voice telephone information and fax of high-functionality. Lately, value-added service operators are extending their business territory in the wave of convergence of information, telecommunications and broadcasting. The number of newcomers into this market is on the rise.

Total sales revenue of the telecom service industry rose slightly to KRW 42.94 trillion in 2004, up by 3.2% from 2003's figures of KRW 41.6 trillion. For telecom service subscribers in the facilities-based telecom service, cellular phones, PCS and broadband Internet subscribers have increased. Broadcasting services saw an increase of subscribers in fixed broadcasting services.

2. Current Status of Telecom Service

I. Facilities-based Telecom Service

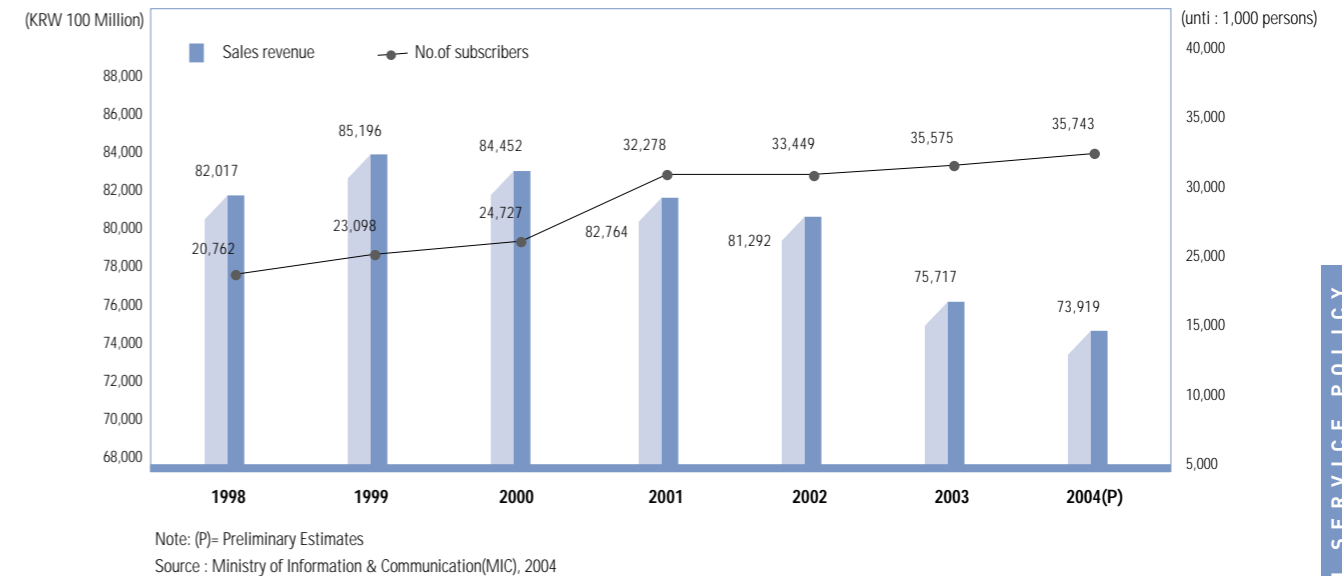
Fixed-line telecom service

1) Telephone

Since 1999, fixed-line telecom service has been on the decline with sales revenue sliding 2.4% year-on-year to KRW 7.39 trillion in 2004. As of the end of 2004, the number of local call subscribers in Korea reached 25.90 million. Of this figure, KT accounts for 93.86%. With the introduction of local number portability in June 2003, Hanaro Telecom, a latecomer to the market, is expected to increase its market share, mitigating the monopolistic landscape of the local call market. In the meantime, semi-electronic telephone exchange equipment for local calls was fully replaced with digital switching systems in July 2003.

At present, there are five facilities-based telecom operators competing with one

[Figure 4-1] Yearly Growth Trend of Fixed-line Telephone Service



[Table 4-2] Yearly Trend of Local Calls

Year	2000	2001	2002	2003	2004
No. of Telephone Lines(1,000 lines)	25,863	25,792	25,735	25,800	26,058
No. of Subscribers(1,000 persons)	25,863	25,584	25,526	25,590	25,900
No. of Subscribers per 100 Persons	55.0	54.0	53.6	53.4	53.9

Note : Main Telephone Lines + ISDN channels + ISDN subscribers
 Source:Korea Association of Information & Telecommunication(KAIT), 2004

another in the international call market. KT once held a monopoly before Dacom, Onse Telecom, Hanaro Telecom (December 2002) and SK Telink (June 2003) entered the market. Due to competitive tariff reductions and market erosion by resale category telecom operators, the international call market shrunk 3.7% to KRW 1.08 trillion in 2004 compared to the previous year. Sales revenue of public telephone service reached its peak in 1998 and has been declining ever since because of increasing mobile phone subscriptions.

2) Leased lines

Driven by the growing demand in data communications since 1996, the leased line service market has rapidly grown. Growth has centered around medium and high-speed leased lines. Domestic leased lines are mostly 56/64Kbps, but some high-speed leased lines deliver at 2Mbps and 45 Mbps. The sales revenue of domestic leased lines has steadily decreased, recording KRW 1.93 trillion, a 6.5% decrease in 2004 over the previous year.

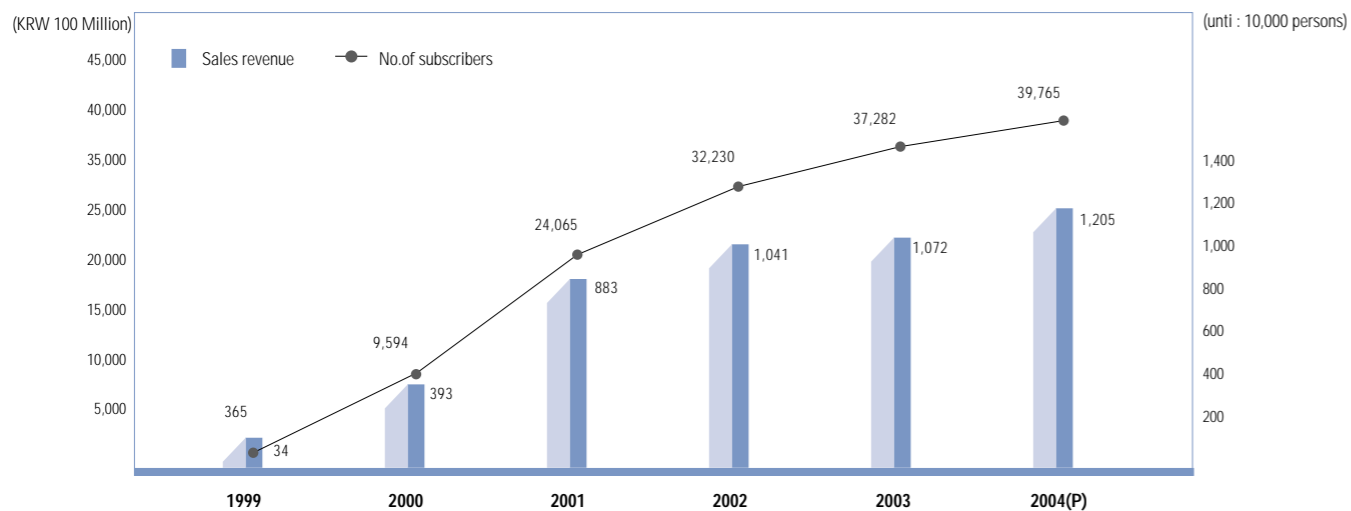
KT and Dacom were the only two players in the International Private Leased

[Table 4-3] *Yearly Growth of Leased Line Service*

Classification	1997	1998	1999	2000	2001	2002	2003	2004
Domestic Leased Lines	7,681	8,116	9,799	15,163	19,422	19,824	19,411	18,420
International Leased Lines	596	620	755	990	1,598	2,000	1,223	882
Sales Revenue(KRW 100Million)	8,277	8,736	10,554	16,154	21,020	21,823	20,634	19,302

Note: Domestic leased lines include local, long-distance and other leased lines, excluding international leased lines.
 Source: Ministry of Information & Communication(MIC), 2004

[Figure 4-2] *Yearly Growth of Broadband Internet Network Service*



Note: No. of subscribers refers to broadband subscribers | (P)=Preliminary Estimates
 Source: Ministry of Information & Communication(MIC), Korea Association of Information & Telecommunication(KAIT), 2004

Circuit (IPLC) service market between 1992 and 1999. Since 2000, following Onse Telecom's entry into the market in 1999, 11 additional operators registered as leased line service providers.

3) Broadband Internet network

When the broadband Internet network service was first launched in June 1998, the number of broadband subscribers stood at 10,000. Since then, it has grown to surpass 10 million in October 2002. Growth slowed with 11.17 million people subscribing in 2003 and 11.92 million people in 2004. The figure suggests this market is reaching close to saturation. The sales revenue of broadband network services surged from KRW 36.5 billion in 1999 to KRW 2.14 trillion in 2001. In 2004, the revenue rose 4.5% to KRW 3.9 trillion over the 2003 figure.

B. Wireless Telecom Service

1) Mobile Telephony Service

By the end of 2004, the number of mobile telephony subscribers increased by 8.9% to 36.59 million over a year earlier, achieving a penetration ratio of 76.1% of the population. As of 2004, 32.54 million or 88.9% of the total subscription are using CDMA2000 1x or more advanced services. CDMA2000 1x EV-DO showed explosive growth in the number of subscribers, soaring by some 118% from 4.37 million in the end of 2003 to 9.53 million in 2004. At the end of 2004, SK Telecom's cellular subscribers registered 18.78 million, taking up 51.3% of the total, while KTF and LG Telecom held a 48.7% combined market share with PCS subscribers amounting to 17.8 million. The 2004 sales revenue of mobile telephony services in Korea registered KRW 16.53 trillion, 4% up from the previous year.

SK IMT and KTiCOM launched W-CDMA mobile phone commercial service in December 2003. At present, the service covers only metropolitan areas. Through continuous investment, it will be expanded to 84 cities across the nation by 2007. The MIC is supporting the facilitation of W-CDMA service.

2) Mobile Internet Service

The number of mobile Internet service users reached 32.53 million people at the end of 2004. This represents 93.6% of total mobile subscriptions. Among mobile Internet subscribers, those who have an exclusive mobile Internet browser such as WAP and ME built in their handset, increased 14.8% year on year. Although

Wireless telecom service is one of the most promising telecom service market in Korea in terms of growth potential.

[Table 4-4] *Sales Revenue & Subscribers of Cellular Phones*

Classification	1999	2000	2001	2002	2003	2004
Sales Revenue(KRW 1Million)	5,277,369	7,281,423	7,794,165	7,008,197	9,459,450	9,645,450
No. of Subscribers(1,000 persons)	13,349	14,453	15,179	17,220	18,313	18,783

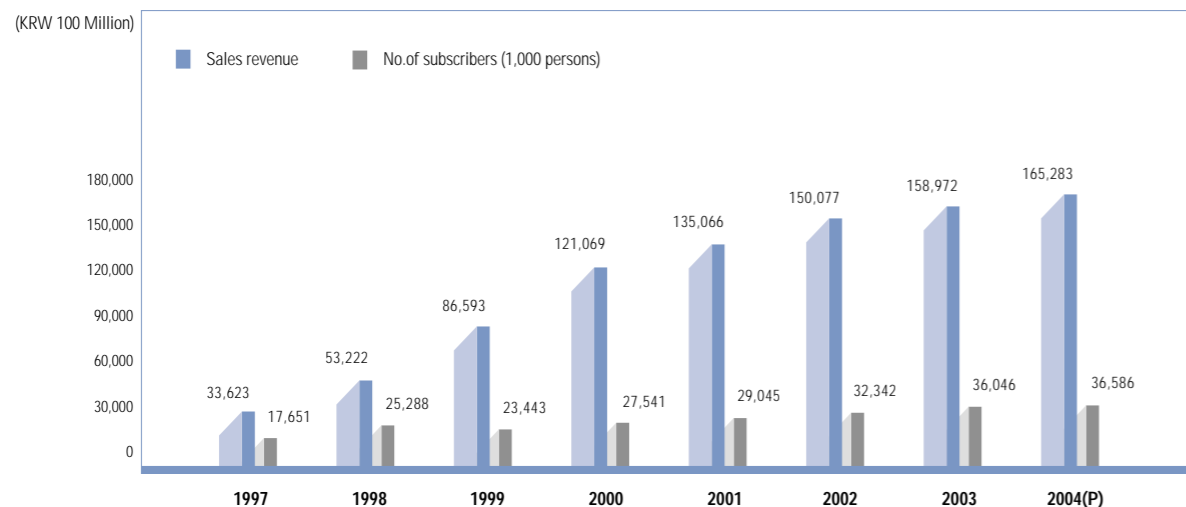
Source : Ministry of Information and Communication (MIC), 2004

[Table 4-5] *Sales Revenue & Subscribers of PCS Phones*

Classification	1999	2000	2001	2002	2003	2004
Sales Revenue(KRW 1Million)	3,381,909	4,825,485	5,712,408	5,206,777	5,928,350	6,882,830
No. of Subscribers(1,000 persons)	10,094	13,088	13,866	15,122	22,534	17,803

Source : Ministry of Information and Communication (MIC), 2004

[Figure 4-3] *Yearly Sales Revenue & Number of Mobile Phone Subscribers*



Note : (P)= Preliminary Estimates

Source : Ministry of Information and Communication (MIC), 2004

subscribers of Integrated Short Message Service(ISMS), which only delivers basic data communications, decreased 48.9%, the proportion of mobile Internet subscribers using a browser for Internet access increased by 97.7%. In 2004, mobile Internet service sales revenue jumped 118.9% to KRW 1.99 trillion, and ARPU soared to KRW 8,180, approximately 18.8% of voice communications.

3) TRS, wireless data communications, paging and other mobile communication services

TRS, wireless data communications, paging and other mobile communication services also showed strong growth the past few years.

Six operators, including KT Powertel and Seoul TRS provides trunked radio system (TRS) service. About 310,000 users subscribe to this service. User growth increased by 10% year on year. In 2004, TRS sales revenues amounted to KRW 98.3 billion, an increase from the previous year by 22.9%. Air Media, Real Telecom and Hanse Telecom are providing wireless data communication services. In 2004, the number of subscribers declined by 5.8% to 110,000, and sales revenue in 2004 rose to KRW 20.5 billion, up 12% from the previous year.

By the end of 2004, the number of pager service subscribers stood at 40,000. Pager service business is barely in existence with figures such as this. The four pager service providers are Real Telecom(provides nationwide coverage), Seoul Mobile Telecom, Eyesvision Corp, and Centis (these three provide regional coverage). In 2004, pager service sales revenues dropped by 59.6% to KRW 5.4 billion from a year earlier.

With growing demand for broadband wireless Internet connectivity through wireless LAN(even in public places), telecom operators like KT and Dacom started providing commercial public wireless LAN service in the 2.4GHz band from February 2002. By the end of 2004, KT retained 430,000 wireless LAN subscribers and Hanaro Telecom had 38,000.

4) B-WLL & satellite communication services

Sales revenue of broadband wireless local loop (B-WLL) service was KRW 8.1 billion in 2004, down 29.7% from the previous year. Satellite communication service revenue decreased by 5.5% to KRW 56.7 billion. Satellite communication service subscribers increased 18.9% from 5,914 persons in 2002 to 7,029 persons.

II. Resale Telecom Service

Resale telecom service as categorized as below witnessed a sharp increase of sales revenue annually from KRW 54.8 billion in 1998. In 2002, the revenue surpassed KRW 1 trillion. Sales revenue of resale telecom service in 2004 was divided as follows:

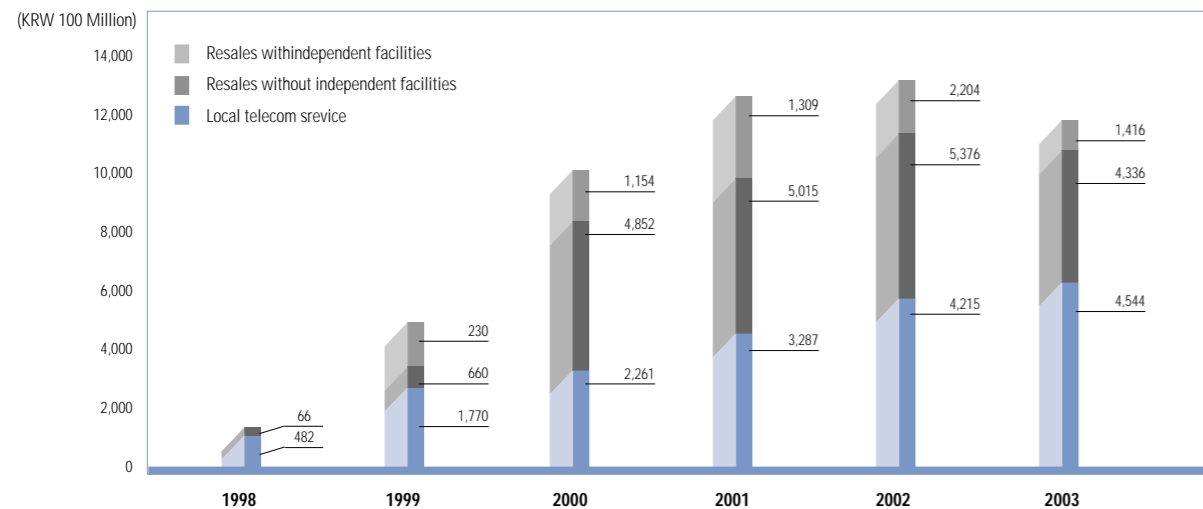
- Resale category 1 accounted for 43.1% of the total
- Resale category 2 accounted for 42.7% of the total
- Resale category 3 accounted for 14.2% of the total.

[Table 4-6] *Classification of Resale Telecom Operators*

Classification	Services	Telecom Facilities	Service Types
Resale Category 1	Facilities-based	Leased Facilities	Line Resale, Internet Telephony,
Resale Category 2	Telecom Services	Without Facilities	Call Back Aggregation, Rebilling, Internet Telephony
Resale Category 3	Telecom Services	In-plant Facilities within the Premise	In-building Communication, Communication between Inside & Outside of the Building

Source: Ministry of Information & Communication(MIC), 2004

[Figure 4-4] *Yearly Sales Revenue of Resale Telecom Service*



Source: Ministry of Information & Communication(MIC), 2004

III. Value-added Telecom Service

Value-added telecom service refers to a series of services provided by operators who lease lines from facilities-based operators, or facilities-based operators who use their own lines, as well as leased lines to create value-added services. Transmission is the basic function of telecom service. Value-added service operators combine the transmission with computation functionality to create a variety of value-added services - circuit switched network, code conversion, telecom speed conversion, amassment & transmission of information, media conversion, computation processing, database-based delivery of information, etc.

1) Network service

2004 network service sales revenue stood at KRW 492 billion, representing a decrease of 1.5% from the previous year. The sales revenue of Asynchronous Transfer Mode(ATM) services and frame relay services increased while that of Virtual Private Network(VPN) and data circuit resale declined.

2) Internet access & management service

Internet access service is a basic service provided by ISPs. It provides Internet connectivity to individual and corporate subscribers through international lines and their own internal access nodes. Sales revenue of broadband Internet access is calculated as one of facilities-based telecom service. Given this definition, users' apparent preference for broadband Internet access since 2001 has resulted in sharp declines in the sales revenue of Internet access services (PC communications, 014XY and etc.) classified under value-added telecom services.

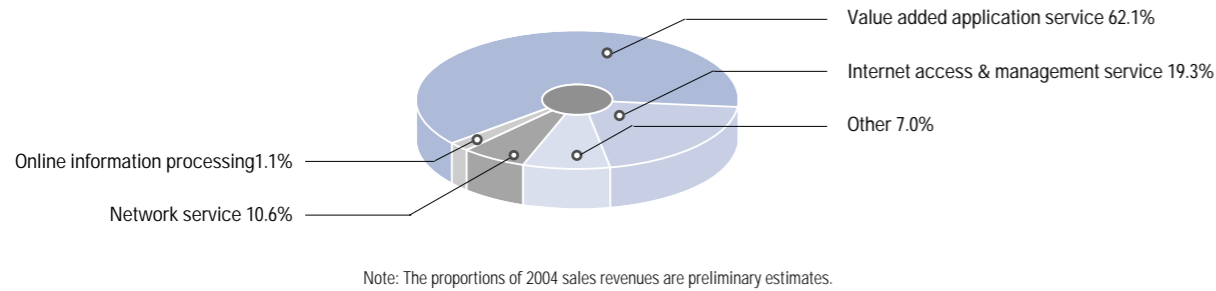
[Table 4-7] *Yearly Sales Revenues of Value-added Telecom Service*

Classification	(unit : KRW 100Million)					
	1999	2000	2001	2002	2003	2004(P)
Network Service	3,545	4,810	5,300	5,095	4,995	4,920
Internet Access & Management Service	8,733	11,170	10,433	8,985	9,316	8,975
Value-added Application Service	5,087	6,921	12,163	20,462	26,930	28,844
Online Information Processing	452	778	955	1,245	672	498
Others	524	735	1,384	1,851	3,259	3,245
Total	18,343	24,414	30,234	37,639	45,171	46,482

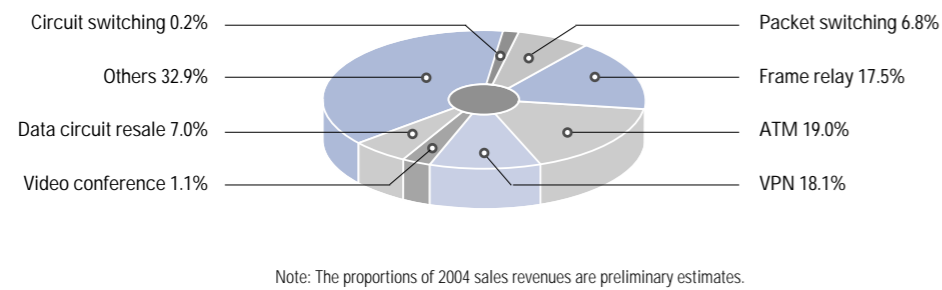
Note : Pursuant to "2003 Classification System for IT Products and Services", 'information provision service' was incorporated into 'value-added application service'.

Source : Korea Association of Information & Telecommunication(KAIT), 2004

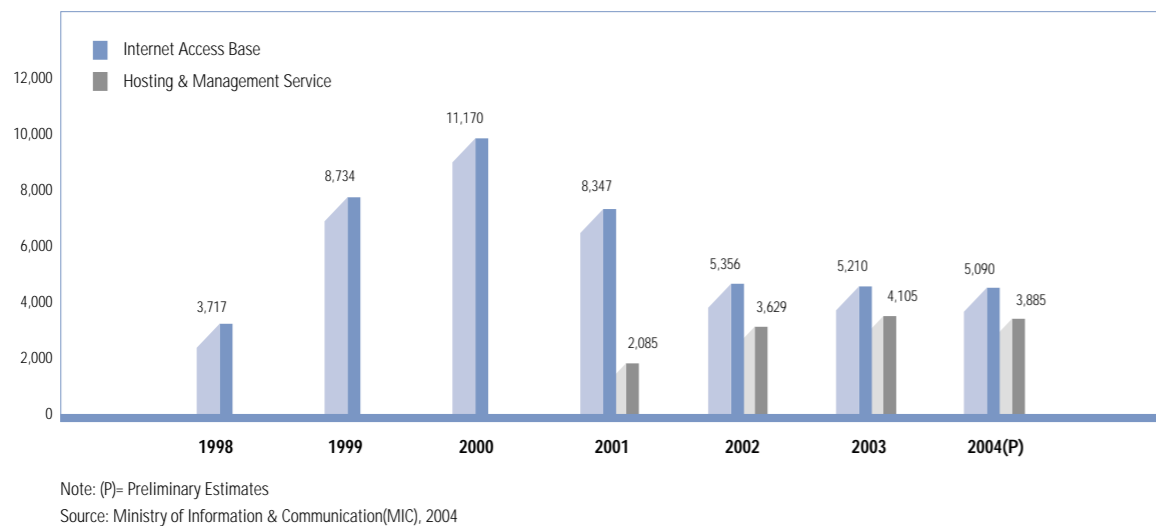
[Figure 4-5] *Proportion of Sales Revenue for Value-added Telecom Service in 2004*



[Figure 4-6] *Proportion of Sales Revenue for Network Services in 2004*



[Figure 4-7] *Yearly Sales Revenue of Internet Access & Management Service*



3) Value-added application services

Value-added application service refers to the provision of telecom service by leasing telecommunication equipment and facilities from facilities-based operators. The service includes all services such as telecom, telex, and telecommunication equipment and facilities leasing except for services notified by the MIC. Value-added application service sales revenue doubled annually between 1997 and 2002. In 2004, it showed 6.6% year-on-year growth to KRW 2.88 trillion.

4) Online information processing service

The online information processing service includes online data processing service and computer time rental service. Since its beginning in 1995, this service steadily grew until 2002. Sales revenue decreased to KRW 49.8 billion or 25.8% in 2004.

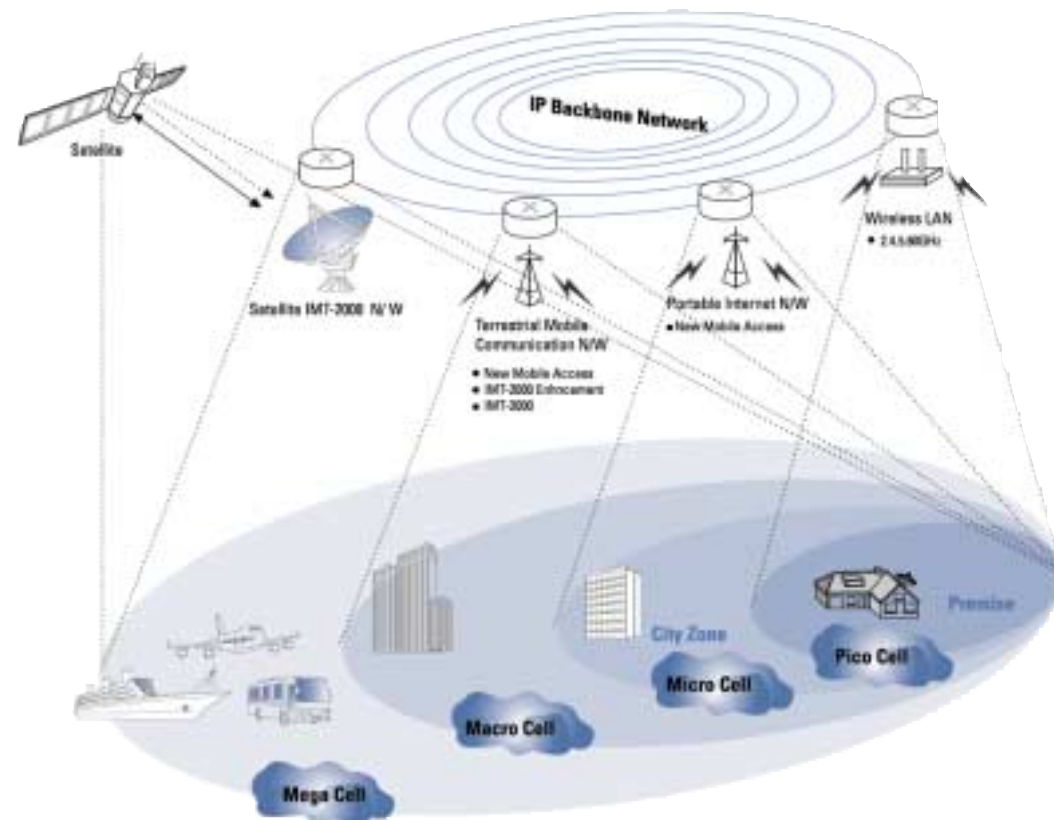
3. Fostering Eight New Services

The IT839 strategy aims to introduce new IT services that can trigger investment in network infrastructure which in turn can nurture development of cutting-edge devices, handsets, and the software and contents industries. The eight new services are as follows.

I. WiBro Service

Wireless Broadband service refers to portable Internet service which provides Internet connectivity at high-transmission speeds at any time and place, whether a user is on the move or not. WiBro service is emerging as a next-generation growth engine in the telecommunications market given market saturation of the fixed and wireless telephone and broadband Internet markets. The government announced details in September 2004 on the licensing of operators including the timing of licensing, the number of operators, frequency allocation price, and usage period. In January 2005, three operators (KT, SK Telecom, Hanaro Telecom) were selected after policy deliberations. With licensing conditions confirmed, the business licenses were issued in March 2005. The government also plans to set up a "WiBro Project Committee" comprising of WiBro

[Figure 4-8] *New Wireless Internet Service*



service-related experts to identify possible technical and managerial difficulties in advance and resolve them through joint actions. Doing so will help complete the development of the WiBro commercial system and associated terminals, and help keep launch trial services by operators on track before the commercial service begins in 2006.

The introduction of WiBro commercial service in 2006 is expected to contribute KRW 22.7 trillion to the Korean economy by 2010. The service will provide high-speed wireless Internet access at an affordable price, enhance consumer convenience and bring in various application services.

II. DMB Service

The early promotion of DMB service is expected to lead the growth of digital broadcasting devices and contents industry, as well as satisfy the public's desire for access to information.

Digital Multimedia Broadcasting (DMB) service is a mobile multimedia broadcasting service that provides high-quality audio and video services through portable or in-vehicle handsets. The service enables CD-quality sound and data services, as well as high-definition mobile TV broadcasting on a maximum seven-inch screen. With the selection of six terrestrial operators in March 2005, the service will begin in metropolitan areas in the first half of 2005 and expand nationally by 2006.

In 2005, core components and interactive multimedia technologies will be developed to introduce two-way service over telecommunications networks in 2006. The Korean terrestrial DMB service standard was adopted as an international standard in 2004. It serves as an opportunity for Korea to become a leader in expanding terrestrial DMB service in the global telecom market.

The early promotion of the DMB industry is projected to create KRW 11.4 trillion in production-inducing effects and KRW 3.7 trillion of value added effect to the Korean economy by 2010. The new mobile multimedia broadcasting service will lead to the growth of digital broadcasting devices and the contents industry and will satisfy the public's desire for accessing information.

III. Home Network Service

The Home Network Service refers to a series of future services for the home, which include consumer electronics control, interactive DTV, VOD, remote healthcare and e-learning. The Home Network Service is expected to create new demand by linkage industries since the services involve telecommunications, broadcasting, construction, and home appliances. To develop future home network service models, a pilot project will be launched in cooperation with service providers, manufacturers and construction companies. A trial service will be provided to 1,300 houses and will expand to two million homes by 2005, and 10 million homes or 60% of total households by 2007. In addition, the government plans to support long-term financing for the deployment of home network infrastructure to spur the spread of home networks in the pri-

vate sector. The home network service is projected to create KRW 110 trillion in production-inducing effects and KRW 73 trillion in value-added effects to the Korean economy by 2010. This service is likely to transform our homes into a pleasant and convenient place with an enriching digital life style.

IV. Telematics Service

The Korean government supports the telematics industry by systematizing the collection and supply of raw data and information, as well as encouraging commercialization of technology.

Telematics is an in-vehicle multimedia service that offers “info-tainment” as well as traffic and emergency rescue operation information via location-based and mobile communications networks. It is a value added service and a novel concept that turns a vehicle into a third Internet space based on fixed and wireless telecommunications and broadcasting networks. Promoting telematics service will strengthen the competitiveness of relevant industries and create KRW 5.9 trillion in production-inducing effects and KRW 5.3 trillion in value added effects to the Korean economy. The government will systemize the collection and supply of key information such as traffic, road-maps, and tourist information. It will also lower terminal prices and usage rates. The telematics pilot service on Jeju Island is providing some five million visitors from home and abroad with an opportunity to experience this service. Using this program, the government is paving the way to expand this service while pushing other pilot projects to use new commercial-level technologies.

V. RFID-based Service

Radio Frequency Identification (RFID) is a sensor technology that uses an electronic tag that contains information on a product. It also gathers information on its surrounding environment. The technology is expected to be used extensively in our daily lives from management of food, livestock, wastes and environment to logistics, distribution and security services. The government will set out technical requirements, develop mobile RFIDs, and complete the development of core technologies such as RFID chips by 2007 to facilitate services in various sectors such as telematics and the home network.

The government is also promoting application services by offering detailed

information about the products through development of mobile RFID technology that combines mobile communications and RFID. The private sector will lead efforts to develop and commercialize tags, readers and middleware while research institutes will focus on developing next-generation core technologies such as ubiquitous network-related sensor nodes. RFID-based service will maximize synergistic effects, bring diversity into our daily lives and enhance consumer convenience.

VI. W-CDMA Service

The Korean government is taking measures to invigorate investment in W-CDMA service, as many Korean companies are expected to enter the global W-CDMA market.

The W-CDMA service is an IMT-2000 service that provides voice, video and high-speed data service in the 2GHz band. After launching commercial W-CDMA service in late 2003, Korea took measures to invigorate the service by encouraging W-CDMA investment, providing handset subsidies, and temporarily fixing tariffs for unlimited data use. In addition, the W-CDMA Technical Support Team, composed of telecom carriers, manufacturers and researchers, was formed to enhance competitiveness of the Korean W-CDMA industry and communication quality of the W-CDMA service. There is also the W-CDMA Working Group that exchanges views on technical and business issues in the domestic and international markets, and actively deals with challenges that arise. Full-fledged W-CDMA service is being launched and is centering around Europe and Japan. Responding to global trends, Korea confirmed its concrete investment plan for domestic W-CDMA service by setting a goal to roll out the service to cities across the nation by 2006. Along with this, many Korean companies are expected to enter the global W-CDMA market.

VII. Terrestrial DTV Service

The terrestrial digital TV service is a high-quality, multi-functional broadcasting service that provides CD-quality sound and definition five to six times higher than that of analog broadcasting. As the digital TV market is expected to have enormous economic and social spillover effects in the future, global competitiveness in this sector will enhance the people's quality of life. The coverage of terrestrial digital TV broadcasting will expand to provinces, cities and towns by

2005, and nationwide in 2006 along with data broadcasting service.

To promote digital broadcasting service, the government has encouraged development of a variety of low-priced TV sets, increased the minimum number of mandatory HDTV broadcasting hours, and improved digital TV broadcasting reception. The government is considering whether to discontinue analog broadcasting in 2010 when the take-up rate of digital television in Korea reaches 95 percent.

Nationwide terrestrial digital TV broadcasting is projected to create KRW167 trillion in production-inducing effects to the Korean economy by 2010. Terrestrial digital TV service will improve the quality of life by easing access to information and various kinds of entertainment, and playing a key role in a digitized home environment.

VIII. Internet Telephony Service(VoIP)

Internet telephony service such as VoIP is likely to play a leading role in the creation of convenient communications environment by integrating video, multimedia, payment and other value-added services.

The high broadband penetration and completion of the Internet backbone networks contributed to creating Internet telephony service(VoIP) that offers inexpensive phone services. The VoIP service converts voice signals into packet data to provide a phone service over the Internet. This Internet telephony service is likely to play a leading role in the creation of a convenient communications environment by integrating video communications, multimedia, payment settlement and other value-added services. For this reason, Internet telephony emerges as a key application for the All-IP based BcN. In 2004, the government overhauled classification of the service and regulation on market entry and exit, and set a policy direction for Internet telephony service which includes interconnection system and SLA. By 2010, for All-IP telephony systems, the government plans to classify VoIP as a facilities-based telecom service, allocate call numbers, and guarantee telephone call-level voice quality. The government also hopes to promote the Internet telephony industry including equipment and S/W in parallel with the development of VoIP service, which is based on advanced broadband infrastructure.

The Korean government has strived to ensure reliable operation of the Internet networks and to establish fair competition.

I. Broadband Internet as Facilities-based Telecom Service

With the high penetration rate of broadband Internet service and broadband Internet's increasing importance, the government has strived to ensure reliable operation of the Internet networks and establish fair competition to enhance its convenience to the people. As part of such efforts, the government decided to re-classify the category of broadband Internet access service from the current category of value added telecom service to the new category of facilities-based telecom service.

It did so by revising the 'Telecommunications Business Act' in July 2004 after consulting with stake holders such as fixed-line telecom operators, cable system operators (SO) and cable relay operators (RO). The revised law requires existing ISPs to get an approval if they are facilities-based operators or register if they are resale telecom operators. The government gave SOs a two-year grace period to adjust to the new changes and to ease the financial burdens imposed under the 'Telecommunications Business Act'. Such burdens include payment contribution and sharing in losses incurred as a result of providing universal service.

II. Interconnection Charge Calculation

To establish a fair, competitive environment in the telecom market, it is necessary to introduce a new interconnection charge calculation methodology in order to charge reasonable interconnection fees. To achieve this, the government developed the long-run incremental cost (LRIC) model that estimates costs incurred after redesigning the telecom network in the most efficient way. The move aims to facilitate effective investment of telecom resources and improve the convenience and benefits for users. The decision to set fixed and wireless interconnection charges on the basis of the LRIC model was made in July 2004, and will be put into effect in 2004/2005.

The new interconnection charge calculation methodology is as follows:
- Estimate operators' cost using the LRIC model;

- Establish an effective competition system in the telecom market and take into account individual operator's costs, characteristics (differences in frequency efficiency, traffic volume, etc.), and competition when assessing interconnection rates. This improves the settlement balance of interconnection rates of new entrants;
- Improve fairness in interconnection charges between fixed and wireless operators and abolish the system of offsetting a 20% operation cost of fixed-line subscriber lines every year. This improves the balance of relatively disadvantaged fixed-line operators.

In addition, the government set forth interconnection standards that contained provisions outlining interconnection obligations for Internet networks and access pricing. It revised the notification on interconnection standards of telecom facilities in January 2005 after deliberations by the Korea Communications Commission(KCC).

III. Local Loop Unbundling (LLU)

To create a fair service-based competition environment, the government drastically strengthened regulations on the Local Loop Unbundling (LLU) system that allows late comers to utilize subscriber lines that are essential in delivering local call and broadband Internet services. For instance, the government reduced the reserve rate of subscriber lines from 25% to 8% (these lines are excluded from unbundling obligations). It expanded the use of shared lines from ADSL service only to broadband service, so that new comers can offer a wide array of services. It increased the number of sample telephone offices (used to set interconnection charges) from three to twelve and re-assessed the cost of using the LRIC methodology.

The government also mandated dominant carriers to provide essential facilities to new entrants so that they can practically utilize telecom facilities such as poles, conduit lines, copper lines and optic cables in the subscriber line sections.

With improvements to the LLU and mandatory provision of facilities systems in 2003, the MIC, the KCC, and the ETRI conducted periodic joint investigations

The Korean government strengthened telecom regulation in order to enhance fair competition in the services market.

into implementation to assess actual conditions, resolve problems, and correct any irregularities to promote a competitive service-based environment.

IV. Improving Universal Service

Universal service guarantees that all users enjoy basic telecom services (local call, pay phone, etc.) at a reasonable price anytime and anywhere. In an attempt to improve existing universal service, the government decided to calculate universal service contributions by adopting the LRIC model. It lowered the contribution fees for new entrants and deficit operators, and relaxed criteria for exempt operators. Before, operators were subject to tariff approval. The revised system allows the government to increase operators' contributions to a certain extent, so that it can be more faithful to the principal of competition neutrality. (July 2004)

V. LM Market Competition and MVNO System

The government implemented various pro-competitive regulations such as LLU and number portability (NP) to facilitate competition in local call and mobile phone markets. To prepare for the deepening 'lock-in' phenomena (dominant carriers predominating because of consumer confidence), the government examined expansion of the land to mobile (LM) call market and introduced the Mobile Virtual Network Operators (MVNO) system.

An independent research institute was entrusted to conduct studies on the possible impact and spillover effects that the above mentioned measures can have on competition. Based on the outcome of this research, the government will assess the status of competition in the fixed and wireless markets and invite views from experts and operators before making a final decision.

VI. Legislating Competition Evaluation System

Markets for local calls, long-distance calls, international calls, mobile calls and leased lines have been subject to annual competition environment evaluations

since 1999. It is now necessary to develop a competition evaluation method that can be consistently applied to competition policy, and to legislate such a system.

For this purpose, the government will revise relevant laws such as the ‘Telecommunications Business Act’. Currently the evaluation system enforcement guidelines has been put forward and implementation results are reflected in competition policy.

5. Enhancing Service Convenience and Reliability

In 2004, the government established local telephone and mobile phone number portability, enacted the law related to Location-based Service (LBS), and improved the systems of online settlement and damage compensation arising from errors in the delivery of telecom services. Through such measures, it stepped up protection for telecom service users. It also pushed on building the telecom disaster management system.

I. Promotion of Number Portability

Number portability(NP) for mobile telephony was gradually introduced to invigorate the telecom market and broaden the rights of users to choose. The adoption of NP began with SK Telecom on January 1, 2004 and was completed on January 1, 2005. Compared to mobile call services, local call NPs have a lower rate of switching providers. It took 13 months to complete the introduction of local call service NP to 21 areas in August 2004 since its initial adoption in four areas, including Ansan, on June 30, 2003.

II. Utilization & Protection of Location Information

Location-based services (LBS) raise concerns over the possible infringement of privacy and property rights if personal location information is improperly released in the development and distribution of the service. To address the

problem, the government established the ‘Act on the Utilization and Protection of Location Information’ in January 2005. It plans to come up with an enforcement decree and enforcement regulations.

III. Protection of Telecom Service Users

The government decided to define the scope of operators’ responsibility to rectify cases where telecom service users do not receive compensation for the damages inflicted while using the service. It also plans to set up a system to reflect views from users groups which are in charge of monitoring the service, and policy proposals on consumer protection from expert groups. With the increasing number of identity theft victims, especially youth who purchase items online without their parent’s consent, the government introduced in April 2004 a ceiling settlement of KRW 70,000 for objects purchased online unless there is a separate request by users to lift the limit.

IV. Telecom Disaster Management System

Telecom facilities are now social overhead capital (SOC). Building a comprehensive telecom disaster management system at a national level is necessary to secure SOC credibility and reliability. In pursuit of this aim, the government established the ‘Telecommunications Disaster Response Committee(TDRC)’ within the MIC, and connected it with a ‘Telecommunications Disaster Situation Room’ consisting of key operators to systemize situation management. In a proactive move, the government made it a rule to conduct regular telecom facilities inspections twice a year and correct problems should they arise.

Radio and Broadcasting Trends
Pursuing Ubiquitous Wireless Infrastructure
Development of Radio and Broadcasting Services
Towards Digital Broadcasting Networks
Environment for Radio Wave Use

Radio and Broadcasting

1. Radio and Broadcasting Trends

I. Radio & Broadcasting Trends and Outlook

Changes in the wireless telecom market

The on-going digitization of terrestrial and CATV broadcasting will accelerate the introduction of interactive broadcasting services.

W-CDMA commercial service was launched in December 2003. With the wide use of various multimedia mobile communications, transmission services for moving pictures over cellular phones have been continually on the rise. Wireless LAN is also expanding from the office to public places like homes, restaurants and parks. As the wireless Personal Area Network(PAN) market enters the early stage of growth, wireless communications between humans or between objects is expected to grow based on u-sensor networks especially in areas of logistics and traffic.

Korea started interactive data broadcasting services through satellites since 2003, and advanced countries like the U.S. and the U.K. are also introducing data broadcasting services. The continuous digitization of terrestrial and CATV broadcasting will accelerate the introduction of interactive broadcasting services. A variety of interactive TV services such as T-Commerce and T-Government are likely to become popular.

Policy changes in radio wave management

The industrial and economic importance of radio wave resources have led to the development of the radio industry. It has also triggered demand for frequencies. It also increased the need to modify the use of existing spectrum and explore new spectrum bandwidths. Government policy has shifted from planning and control to support for the radio industry and the use of radio waves. Increased demand to protect the environment eased ex-ante regulation while strengthening ex-post regulation related to electromagnetic waves and the right to utilize radio waves.

II. Radio & Broadcasting Policy

Promoting the radio & broadcasting industry

The government will consolidate its policy function and structural capability to lay the foundation for the radio and broadcasting industries to grow into the nation's core industry. It will also actively engage in international cooperation and improve understanding of Korea's advanced IT and help the radio and broadcasting industries make inroads into overseas markets.

The Korean government will improve the system of utilization of radio waves, radio device certification procedures and ease the restrictions on the use of radio stations.

Creating safer environment for users

The government will improve the system of utilizing radio waves, simplify radio device certification procedures and ease restrictions on using radio stations. The purpose in doing so is to facilitate the utilization of radio waves by enterprises and people as well as support the introduction of radio wave technologies. Technical requirements will be overhauled to prepare for the commercialization of new radio wave communication technologies such as RFID and Ultra Wide Band(UWB). The government plans to promote the use of local area communication devices needed in the ubiquitous environment.

Efforts will be made to address people's uneasiness about the harmful effects of electromagnetic waves to the body and put base stations to common use. Research on the effects of electromagnetic waves to the body will be carried out along with standardization of methods and procedures to measure the impact of human exposure to electromagnetic waves. The government will develop a standard model for environment-friendly base stations and provide incentives to the operators who build them.

Advanced radio wave monitoring was built to facilitate efficient use of radio waves, and to maintain and protect the order of utilizing radio waves through various measures such as prompt elimination of radio interference. The government will sternly regulate illegal radio facilities that undermine clean use of radio waves. The system to monitor online circulation of unlicensed software to produce cellular phones will be under tighter operation and there will be more active education programs for people.

Continuous pursuit of digital broadcasting

The controversy over DTV transmission methods ended in July 2004. This was followed by the resumption of DTV broadcasting in metropolitan areas (KBS on Jul.12, MBC on Jul.30). As of December 2004, of the provincial government seats, nine broadcasters including KBS1, KBS2 and EBS launched digital broadcasting in Changwon and Jeju island. The government is reviewing the 70 applications submitted to launch digital broadcasting in cities and towns.

DTV penetration is expected to increase and digitization of terrestrial broadcast-

ing will proceed. A variety of support will be extended for the production of digital programs. The government will encourage the production of HD programs to expand the opportunity to view HD broadcasts. It will improve HD contents production environments in metropolitan and local areas and plans to support projects for HD contents production by broadcasters and independent production companies. Commercial broadcasting of satellite DMB and terrestrial DMB is scheduled for 2005.

Government efforts will also be directed to maintain and expand national competitiveness in digital TV and promote the digital TV and broadcasting industries as next-generation growth engines. It will do so by supporting their entry into new markets, like the DMB market.

Improving radio spectrum management

To efficiently manage spectrum, the government will build a u-Sensor network to develop RFID wireless communication technology and create services. It will also allocate frequencies in the 5GHz band to ensure widely available wireless Internet access and faster home networking connections. The 2.3GHz band was distributed for WiBro, and its operators has been selected with frequency allocations. Simple radio stations (accounting for 40% of total radio stations) are widely used in people's daily lives. Thus, the government will secure more frequency resources for simple radio stations to improve convenience and will promote Land Mobile Radio(LMR)-related industries.

2. Pursuing Ubiquitous Wireless Infrastructure

I. Frequency Allocation for New Services

RFID will spur innovation in various fields including distribution, product management, security and safety. To secure frequencies for the RFID-based service, the government conducted research on frequency allocations in compliance with ISO/IEC standards presented in 2003, and assigned spectrum between 908.5~914MHz(5.5MHz bandwidth) for global logistics and distribution in July 2004. Container management was given a radio frequency range of

433.67-434.17MHz(500kHz bandwidth) in December 2004 to share it with existing amateur radio for smooth global logistics and distribution.

The demand for 5GHz frequencies for wireless LAN has risen sharply around the world due to the expansion of wireless broadband Internet service, high-speed home networking connectivity and development of wireless technology in the 5GHz band. The U.S. and the U.K. have already approved the 5GHz band for wireless LAN. In Korea, the WRC-2000 meeting allocated the 5GHz band (5,150~5,350MHz, 5,470~5,725MHz) for wireless access systems including wireless LAN. There is growing demand for the 5GHz band by Korean manufacturers and corporate users.

The government submitted its position on the outcome of the WRC-2003 meeting in June 2003, and set up a task force in charge of allocating 5GHz frequencies in August. Based on the studies by the task force, the government formulated a frequency usage policy and allocated the 5,150~5,350MHz and 5,470~5,650MHz band ranges. These ranges were shared with other existing uses in November 2004. The service using 5GHz frequencies is likely to be available in the near future.

The U.S. licensed the commercial use of UWB technology in February 2002. International organizations like the ITU and key advanced countries are pushing to develop and standardize UWB-related technologies. Consistent with this, Korea set up a study group in February 2004 to come up with conditions to allocate and use the UWB frequency band while considering other factors such as international trends, technological development and frequency interference.

The government has been operating a study group on frequencies for new growth engine industries since May 2004. The study group aims to research technological trends of such industries as home networks, 5GHz broadband wireless LAN, and RFID, to make first mover advantage in international standards, and to support the domestic spectrum allocation and policy systems.

II. Securing Frequency for Mobile Communications

The Korean government has made efforts to improve the efficiency in domestic spectrum allocation and policy systems.

Securing spectrum beyond 3G mobile communication is critical for new portable Internet services that will be introduced in the near future.

The new WiBro service allows users to search the Internet, at high-speeds using a portable handset, at anytime and at any place. To introduce this new service, the government began to study spectrum allocation for WiBro in January 2003, and set out a plan to retrieve the under-utilized 2.3GHz band and reallocate it for WiBro. Originally, the 2.3GHz band was distributed for Narrow-Wireless Local Loop(N-WLL) and used for communications on islands. In November 2004, the government announced to the public on spectrum allocation for the 2.3GHz band.

In addition to 230MHz bandwidth(1,885~2,025MHz, 2,100~2,200MHz) allocated for IMT-2000 at the WARC-92, the ITU identified three additional spectrums in the 806~960MHz band as well as within the 1,710~1,885MHz and 2,500~2,690MHz bands at the WRC-2000. This was designed to meet the drastic increase of telecom subscribers and a sharp demand for wireless Internet service.

In response to this, the government organized a 'Spectrum Band Plan Study Group' in January 2004 to look at how to reassign domestic spectrum bands that the ITU had additionally distributed for IMT-2000. The study result so far shows that of the additional bands, the 806~960MHz band and 1,710~1,885MHz are already in use for cellular phones and PCs. The 2,500~2,690MHz band, allocated for wireless cable TV, has been suspended. The 2,630~2,655MHz band was allocated for satellite DMB. Accordingly, Korea plans to utilize these spectrum bands for IMT-2000 in consideration of domestic and international trends.

Currently, the ITU is reviewing a frequency band beyond 3G use with a goal to deliver the service in 2010. The in-depth discussions on the issue will be made at the WRC-2007. In preparation for the meeting, the government will seek ways to secure spectrum beyond 3G mobile communication.

III. Improving Efficiency of Radio Wave Resources

Simple radio stations are widely used and account for 40% of all radio stations in Korea. These stations densely use specific spectrum bands. In doing so, it worsens interference making it inconvenient for users. The emergence of broad ranges of new radio communication services require the timely supply of new

frequencies. New frequencies will increase convenience, benefit consumers, and support corporate activities.

With this understanding, the government secured the 3.5MHz bandwidth (376.5~380MHz) by reallocating TRS frequencies to LBS after reviewing a public study for consumer demand. Frequencies for Wireless Local Loop (WLL) were redistributed for WiBro service after collecting views from relevant organizations and operators. Since the 2MHz bandwidth frequency (422~424MHz) for simple TRS were not being used efficiently, the 500MHz' bandwidth was awarded to simple radio stations who were strongly demanding it. The non-sequentially allocated frequency range of 440~470MHz (30MHz bandwidth) will be sequentially allocated to organizations who use the band to improve efficiency and secure surplus frequencies.

VI. Radio Waves Usage by Unauthorized Radio Equipment

The Korean government promotes the use of various kinds of radio equipment and utilization systems, which are expected to increase in tandem with the consumer's desire for easy-to-use communication.

Radio equipment is widely used in our daily lives for voice and data transmission in personal area networks, remote control of vehicles, and leisure products. The demand for unauthorized radio stations in the ubiquitous environment will sharply increase in response to the consumer's desire for easy-to-use communications.

To promote the use of radio waves by unauthorized radio stations, the government plans to form a task force which will examine and analyze global short range radio equipment trends and systems. This will identify and address the problems that Korea has in using radio equipment. Technical development will be encouraged to allow the use of various kinds of radio equipment and the utilization system of unauthorized radio stations will be more systemized, so that radio wave users can easily understand relevant regulations.

V. Utilizing Power Line Communication

In the past, the government limited the bandwidth of power line communication (PLC) to under 450MHz for licensing and operation since radio wave leak-

age from power line communications had the potential of causing interference in wireless communications. With today's increasing PLC demand (for diverse purposes such as home networking and in-building communications), the development of related technologies are actively underway. Improving current regulations are needed to spur PLC use.

The government decided to approve the use of PLC equipment only if its electric field strength is lower than 54dB μ V (when measured 3m from a modem), and an electromagnetic compatibility (EMC) registration of the equipment is filed. Before, each PLC equipment was subject to government approval regardless of power output. The government also revised the 'Radio Waves Act' in the second half of 2004 to expand the frequency band from under 450kHz to under 30MHz. To enable high-speed PLC, the government will devise criteria for the prevention of electromagnetic interference (EMI) and the development of related technologies by the first half of 2005. It will notify the public after gathering views on it to minimize any user inconvenience.

VI. Securing Satellite Frequencies & Satellite Orbits

Countries around the world are rushing to file international registration applications to secure satellite orbits and frequencies for satellite communications and broadcasting services. It takes at least five years to complete the international registration because procedures such as coordinating between satellite networks are necessary. Therefore, the government will plan to utilize efficiently satellite resources that it will acquire and apply for international registrations of more than one satellite network. In February 2004, Korea applied for a Communication Ocean and Meteorological Satellite (COMS) registration with the goal of a satellite launch in 2008. It plans to file another international registration application in the future.

To develop a cadre of satellite network interference coordination experts, and shore up functions of related organizations, the government will strengthen its support for education, seminars, and technological exchanges and transfers related to international registrations of satellite networks and interference coordination.

I. Legal & Institutional Frameworks

There is a paradigm shift in radio wave management from a technical problem (interference regulation) to an economic problem (the efficient allocation of resources). In 2003, the government held a policy discussion on introducing a frequency auction system and a meeting to discuss how to improve the usage rate of radio waves.

In 2004, the government reviewed a revision of the law to promote digital broadcasting service and converged telecommunications and broadcasting services. Based on this review, it set forth legal grounds to introduce DMB, and revised the 'Broadcasting Act (Mar. 2004)' and its 'Enforcement Decree (Sep. 2004)' that pertains to the digital broadcasting environment. The 'Enforcement Decree of the Radio Waves Act' was also revised (Sep. 2004). The government developed a radio wave management system to distribute efficiently radio wave resources and ease regulations on radio wave management. At the same time, it will implement structural reform consistent with the changing environment of using radio waves. It also plans to draw up a reasonable pricing system for radio wave usage based on a user-pays principle (UPP).

II. Radio & Broadcasting Technologies

To increase the competitiveness of the radio and broadcasting industries and assist with their international ventures, the government developed concrete plans for the technological development of DTV and signed the arrangement with relevant organizations. Last year, KRW 74.4 billion was spent to develop core technologies of radio and broadcasting such as satellite communications. Next-generation digital broadcasting technology will be developed to keep pace with the transition from analog to digital. In doing so, Korea will take one step closer to become a digital broadcasting leader.

III. Fostering Radio & Broadcasting Experts

Despite an oversupply of university graduates, there is a quantitative and quali-

Korea needs to develop more specialists in the radio wave sector.

tative shortage of specialists in the radio wave sector due to the lack of specialized education in this field and the unpopularity of science and engineering. This radio and broadcasting sector will have a projected workforce shortage of about 10,000 people from 2005 to 2007. To address this problem, the government will develop a radio and broadcasting experts nurturing program. It will include the retraining of those experts in this field, and target public servants from developing countries for education. The latter aims to build a cooperative system by developing human resource networks with those countries. The government will also designate universities nationwide to specialize in radio engineering and develop them into special educational institutes for radio waves. It will also provide equipment and scholarships to those universities to entice student enrollment. A new curriculum for elementary, secondary and tertiary schools will be developed and distributed to meeting the needs of industry.

IV. Strengthening International Cooperation

Countries around the world are striving to standardize their home-grown technologies on an international level by actively participating in international standardization activities. They make best use of ITU-R research activities. The organization makes a decision when introducing new services related to radio wave communications and broadcasting and set technological standards and criteria for frequency sharing. Countries are also actively engaged in the WRC, an organization that is responsible for allotting spectrum frequencies and satellite orbits. It also establishes and revises relevant regulations and procedures. Korea vigorously participates in the ITU-R's research activities and the WRC in an attempt to reflect Korean technologies. Since the launch of the WTO in 1995, developed countries have pushed ahead to conclude MRAs in order to bring down non-tariff technical barriers and promote trade. Korea has already signed MRAs with Canada and Chile.

V. Securing Space Radio Wave Resources

Satellite orbits and frequencies are essential for satellite communications and broadcasting services and countries across fiercely compete. Over the next 10

[Table 5-1] *Launch of Commercial Geostationary Orbit Satellite*

Category	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Yearly Average
Satellite	20	22	16	19	19	22	22	23	24	24	21.1

COMSTAC : Commercial Space Transportation Advisory Committee(U.S.), 2004

years, an average of 21.1 commercial geostationary orbit satellites are projected to be launched. In order to protect and promote the Korean satellite industry, it is necessary to secure spectrum resources for satellites. Korea will continue to coordinate satellite networks with key neighbors such as Japan and China while filing with more international registrations to secure new satellite resources.

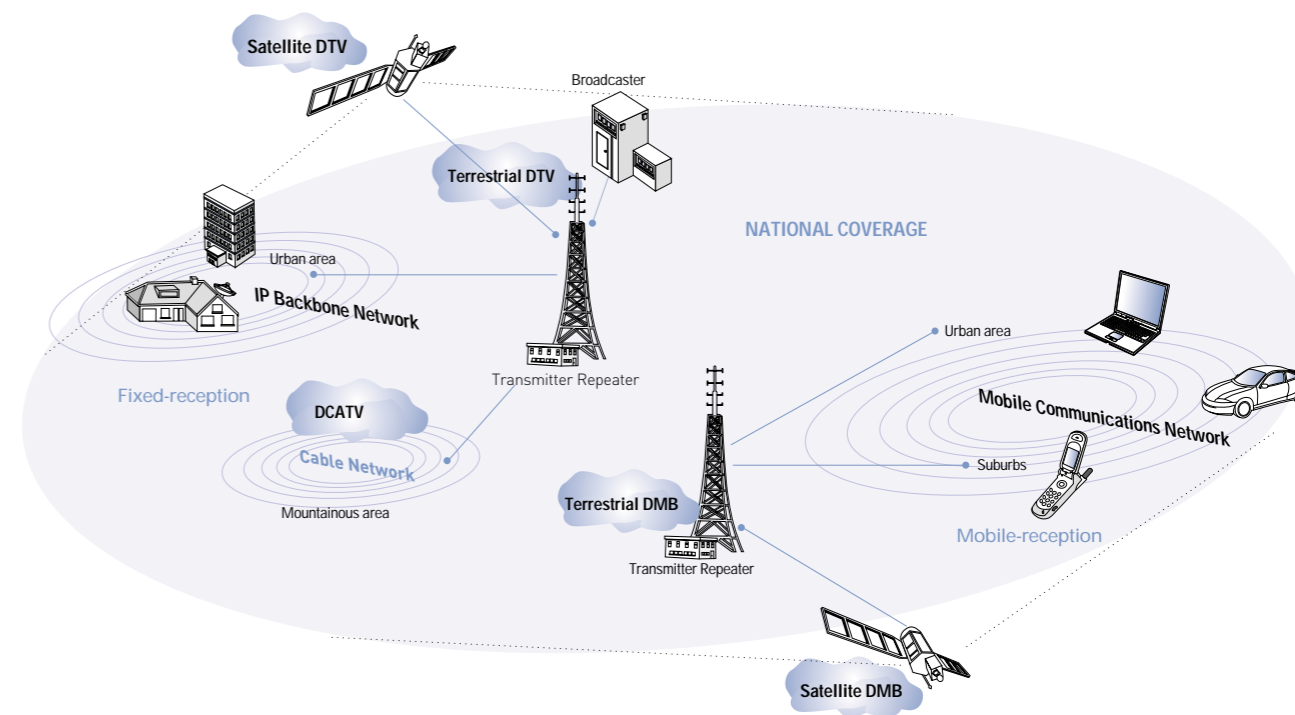
4. Towards Digital Broadcasting Networks

I. Digital Terrestrial TV Broadcasting

Korea's terrestrial TV broadcasting is rapidly migrating to digital broadcasting. Digital broadcasting companies established themselves in metropolitan areas in the second half of 2001, and in some provincial government seats in 2004. In 2001, the Korean government initiated digital broadcasting services in the Seoul metropolitan area and planned to expand it to other metropolitan areas by the end of 2003. However, the plan was delayed due to controversy over the transmission method of digital TV. Digital broadcasting service resumed in metropolitan areas after the government ended a four year debate, through dialogue and compromise, over the transmission method of terrestrial DTV on July 8, 2004. As of December 2004, of the provincial government seats, nine broadcasters including KBS1, KBS2 and EBS launched digital broadcasting in Changwon and Jeju island. The government is reviewing the 70 applications submitted to launch digital broadcasting in cities and towns.

II. Early Deployment of Digital Broadcasting

[Figure 5-2] *Next-generation Broadcasting Infrastructure*



[Table 5-2] *Digital Service by Broadcasting Media*

Broadcasting Media	Features
Digital Terrestrial TV Broadcasting	Large Screen • High Definition • 3D Sound & 3DTV
Digital Satellite Broadcasting	Services such as multimedia broadcasting suitable for shadow area
Digital CATV	High-quality interactive service such as data broadcasting & T-commerce
DMB (Terrestrial, Satellite)	Mobile service for pedestrians or small moving vehicles like passenger cars

Source : Commercial Space Transportation Advisory Committee(U.S.), 2004

To reduce the financial burden imposed in the early stage of the analog-to-digital conversion, the government is providing loans to terrestrial broadcasters (KRW 50 billion in 2003, KRW 60 billion in 2004, KRW 30 billion in 2005). It has extended the tax reduction period for imported digital broadcasting equipment (85% of tariff rates), from 2001 to the end of 2006. High-quality digital content such as HD TV programs have been provided to the TV viewers from 2003, and a KRW 10 billion project was conducted to foot digital broadcasting

production. The government plans to increase the mandatory broadcasting time of high-definition programs from 10 hours in the first service year to 20 hours a week in the first half of 2005.

III. Terrestrial Mobile Multimedia Broadcasting

Terrestrial mobile multimedia broadcasting services will be widely available after the MIC review of licensing procedures for broadcasters.

Terrestrial mobile multimedia broadcasting utilizes the very high frequency (VHF) band (174~214MHz) allotted for TV. Thus, it is a mobile and portable broadcasting service that transmits high-resolution TV programs. The metropolitan areas secured two channels (Channels 8 & 2) for terrestrial DMB service, finished all technological preparations, and overhauled institutional systems. The preparatory measures include developing technology for terrestrial DMB transmission and reception system, completing the development baseband chips for terminal (Oct. 2004), notifying video transmission and reception matching standard(Aug.2004), devising draft standard for data broadcasting(Sept. 2004~), and so forth.

The Korea Communications Commission (KCC) selected six DMB operators (three terrestrial broadcasting operators & three non-terrestrial broadcasting operators) to provide mobile multimedia broadcasting to metropolitan areas in March 2005. Terrestrial broadcasting operators are scheduled to apply for licensing in the first half of 2005 while non-terrestrial broadcasting operators are expected to apply in the second half of 2005. The MIC will promptly review and process the licensing procedures for broadcasters, so that the terrestrial DMB service can be delivered soon. The reallocation of channels in non-metropolitan areas will be completed in the second half of 2005 and terrestrial DMB service will be available by the end of 2006. Terrestrial DMB was adopted as a World-DAB standard in December 2004, and is in the process of being accepted as an international standard by the European Telecommunications Standard Institute(ETSI) and the ITU.

IV. Satellite Mobile Multimedia Broadcasting

Korea launched a satellite for satellite mobile multimedia broadcasting in

March 2004, and completed overall technical and institutional preparations to deliver such services as allocating spectrum, simplifying licensing documents for broadcasters, and notifying transmission and reception matching standard. The Korea Broadcasting Commission (KBC) reviewed recommended license applicants and selected TU Media, a single applicant corporation, as a final DMB operator. The MIC awarded a license to TU Media for satellite DMB broadcasting service in December 2004. TU Media launched its trial service in January 2005, and began to provide 30 channels of commercial service from May 2005.

V. Digital Cable Broadcasting

Satellite mobile multimedia broadcasting and digital cable broadcasting began service this year.

Digital cable broadcasting will go into full service in 2005. Digital Media Center (DMC) will spearhead this effort after completing conversion. By the end of 2006, 77 operators or 64.7% of 199 SOs are expected to complete the digital transition resulting in service coverage for 66.8% or 8.62 million of households. The government started providing loans to cover digital broadcasting conversions in 2003 and will continue to do so through 2005. It created a certificate system for digital cable broadcasting equipment using the Open Cable standard. This served as a foundation to ensure competition in the domestic cable broadcasting equipment and devices market. Giga-class transmission and reception systems will be developed from 2004 to 2007. The government will continuously nurture experts and invest in technologies to upgrade next-generation cable networks through the development of cable-based convergent core technologies.

VI. Digital Broadcasting Technology & Overseas Ventures

To develop technology effectively, the government set up a working-level consultation body and strengthened its international standardization activities. It established an industrial basis for sharpening the competitive edge of digital broadcasting. A strategic group composed of representatives from the government and private sectors was set up to facilitate the digital broadcasting industry's foray into overseas markets by conducting global market studies and analyzing competitiveness. To become the first from the gate in the global digital broadcasting market, the government will inject KRW 225.4

billion(KRW 40.4 billion in 2005) for five years by 2008 to develop next-generation digital broadcasting technologies.

5. Environment for Radio Wave Use

I. Radio Wave Utilization System

The radio wave management paradigm has shifted from government-led ex-ante regulation to market-oriented self-regulation as well as ex-post regulation by the government. In 2004, the government improved the radio wave utilization system. It reformed the licensing system of amateur radio stations and simple radio stations, expanded communication methods for trans-ocean communication, approved maritime mobile repeaters, and established or revised technical standards for TRS, cordless telephones and ship security alert systems. It also operated an online chat room on the MIC homepage to allow citizens to make comments or suggestions on radio wave policy.

II. Establishing Effective Environment for Radio Wave Use

Improving radio wave monitoring functions

In order to respond to the rapidly changing radio environment, the government has set forth comprehensive mid and long-term plans. It is also stringently monitoring radio quality and cracking down on the illegal use of radio waves. It expanded monitoring facilities on Jeju island and in metropolitan areas to close loophole problems in dead-angle areas and improve the monitoring environment. The government also improved working hours and functions. Consequently, all radio monitoring except the one related to the health of the public is done during the day.

Developing radio monitoring equipment technology

The government is building an intelligent radio monitoring system to ensure the systematic and effective management of radio wave resources. It also has developed intelligent radio measuring systems and transferred technology to

private companies. Most core systems in the radio monitoring sector are expensive imported equipment. The government has sought to develop domestic technology for radio monitoring equipment and is beginning to reap benefits from this investment. It has already secured some related technology, resulting in an import substitution effect and budgetary savings.

Investigating unauthorized wireless facilities

With the rapid development of radio technology and the emergence of new communication services, the number of radio stations has surged from 29.54 million in 2001 to 37.61 million. So has the disturbances that resulted from the growing use of unauthorized wireless equipment and illegal radio stations. The press and the National Assembly are pointing out social problems that have resulted, including personal watch and financial damages stemming from illegal copies of cellular phones. To resolve these problems, the government has investigated against illegal radio stations, unauthorized wireless equipment and illegal copies of handsets. Investigations are managed regionally and target large retailers and online shopping malls. In the meantime, the government has commenced campaigns on TV, radio, the Internet and in newspapers to inform people of how to use radio in a correct way.

Prevention of telecom privacy infringement

The drastic development of communication technology has made illegal eavesdropping activities easier. This in turn has increased the necessity for privacy protection. The government responded by revising the 'Communication Secret Protection Act'. This Act requires those who want to pursue an anti-tapping business to meet certain conditions and register their business. A registration system for anti-tapping businesses was introduced. To implement this system, the government outlined registration requirements and punishment criteria. The registration system, which was put in place when the revised act took effect in July 2004, contributed to assuaging people's anxiety.

III. Research on Impact and Protection of Radio Waves

The government established a standard for protecting humans from radio waves and researched the impact of radio waves on the human body. This research

With the emergence of new communication services, so has personal and financial damages stemming from illegal use of unauthorized equipment.

included an epidemiologic investigation and experiments on how chronic exposure to radio waves, from such devices as mobile phones and PCs, affect cells and animals. Research also included a study on the exposure rate of radio waves from multiple handsets like PDAs.

Korea continues to conduct research on the impact of radio waves, as well as encourage manufacturers to provide information that may have impact on the human body.

The government encouraged handset manufacturers to voluntarily disclose their products' radio wave absorption rates through homepages and product manuals starting in March 2003. It mandated that mobile handset manufacturers provide information and figures on radio wave absorption at their websites to any consumer who received the test about radio wave absorption rate. A study is ongoing to identify the impact of radio waves on human bodies. A potential health risk has risen since people are constantly exposed to radio waves radiating from mobile phones and computer monitors.

The government participated in the World Health Organization(WHO)-led international radio wave project in June 2003 to share R&D outcomes and policies and standards to protect people from radio waves. During the meeting, Korea reviewed the ongoing WHO radio wave projects and presented WHO members' policy and research on protecting people from radio waves. The government plans to hold the radio wave meetings with the U.S., Japan, and EU in 2005. The government provides people with information about radio waves and its impact on the human body at its own website (www.emf.or.kr). It also makes continuous efforts to raise awareness about radio waves by publishing and distributing radio wave-related news booklets.

IV. EMC Technology Standardization

The government drew up EMC specifications for high-speed railways and maritime devices to protect the radio wave environment in Korea, and enhance international competitiveness and credibility of related products. Every year, it reviews the prevention, protection and measuring methods of EMI for compliance with international standards. The EMC issue has the potential of being a new trade barrier as its regulation items and frequencies have increased. In response, the government set up the EMC Center to support SMEs to develop EMC design technology and provide EMC-related information ([Radio and Broadcasting Trends
Pursuing Ubiquitous Wireless Infrastructure
Development of Radio and Broadcasting Services
Towards Digital Broadcasting Networks
Environment for Radio Wave Use](http://www.emc-</p></div><div data-bbox=)

center.or.kr). It also offers specialty education to EMC engineers of IT SMEs, and plans to strengthen its support for industry by building test-labs for EMC and antenna standards.

Technical requirements on wireless facilities and access systems are needed to encourage technological development and standardization.

V. Technical Requirements for Wireless Facilities

The technical requirements for wireless facilities are being changed to reflect minimum technical specifications for the efficient use of radio waves and prevention of frequency interference. Similar to countries like the U.S. and Japan, the Korean government manages technical requirements while private entities take care of technical standards. Through such a system, the government is encouraging voluntary technological development by the private sector. The MIC outlined technical requirements on wireless facilities for wireless access systems including RFID and 5GHz WLAN. The MIC continues to keep abreast of international trends on technical requirements for new wireless facilities. It aims to ensure that the new radio communication service can soon develop in the Korean market, encourage technological development and standardization, and incorporate home-grown core technology into new international standards.

VI. Deploying Environment-Friendly Base Stations

To prevent investment redundancies in mobile telecom base stations and protect the environment, the government seeks to encourage the building of environment-friendly base stations. These stations will be in common use for the newly-added base stations coming out in IMT-2000, PCS, IS-95, CDMA 1X, and EV-DO technologies. The government has simplified administrative procedures by removing the deliberation process for radio stations. Radio stations will either be put to common use or built environmental-friendly. For common use radio stations, the government is cutting radio usage and inspection fees. To expand green-friendly radio stations, the government has defined the concept and types of these stations and set out installation standards. But, in case it is difficult to set out object installation standards, the government recommends an installation model, and actively pursues the joint development of radio stations, which are environmentally friendly.

Global IT Trends
Promoting IT Exports and Overseas Ventures
Foreign Investment in IT
Global IT Trade Negotiations
Strengthening Global IT Cooperation
Promoting Inter-Korean IT Exchanges and Cooperation

International IT Cooperation



1. Global IT Trends

I. Global IT Trends & Policy Direction

Rapid IT development has created the problem of global digital divide; countries around the world are joining efforts to provide solutions to the challenges posed by the digital gap.

As IT continues to hold a growing importance to the national economy, and developing countries strategically recognize IT as an important tool for economic development, Southeast Asia, Eastern Europe, the Middle East and Latin America are rapidly emerging as new IT markets.

Rapid IT development has created a global problem: the digital divide. To bridge the digital gap, international organizations and developed countries have expanded their support for human and physical resources while having active discussions on desirable solutions to the challenges posed by the digital gap.

The liberalization of world trade has led to regionalism and economic blocks. In response to this, Korea recently signed an FTA with Chile and is considering more FTA conclusions with countries like China, Japan and Singapore to maximize national interests.

II. Key Policies for Global IT Cooperation

IT industry's entry into overseas markets

In order to overcome export difficulties stemming from the globalized nature of the IT industry, and build a CDMA belt across the world, the government holds mobile communication road shows in new IT and niche markets, and holds IT cooperation forums. At the same time, it dispatches groups of people composed of government and private sector representatives abroad to explore new IT markets and diversify export destinations.

Facilitating foreign investment in the IT industry

Korea focuses on attracting foreign investment in IT by actively publicizing its strengths. These strengths include having an advanced IT infrastructure and industry, and being an ideal test bed for cutting edge products and services. It also attempts to lure IT investment by meeting with CEOs of globally renowned IT companies and inviting them to set up R&D centers in Korea. Concurrently, MIC works to improve legal and institutional systems by consulting with relevant ministries.

Active response to new requirements in global IT

To promote trade with other countries, the MIC actively participates in the WTO Doha Development Agenda(DDA) telecom service negotiations and has participated in the Korea-Singapore and Korea-Japan FTA negotiations. It also actively engages in bilateral talks with the U.S., EU and Canada.

Substantial activities in international organizations

Korea will lead cooperative efforts in the IT field by cooperating with international organizations such as the ITU, APEC, OECD, and the APT. It will also expand cooperation projects with key member economies, take an active participation in the activities of the international organizations and make utmost efforts to earn better recognition on the global stage.

2. Promoting IT Exports and Overseas Ventures

I. IT Industry & Overseas Venture Trends

IT equipment

1) Telecom equipment

Korea registered a telecom equipment trade balance of USD 22.1 billion at the end of 2004, up USD 7 billion from the previous year. This was due to an expansion of the CDMA handset market and Korean manufacturers' successful foray into the global GSM handset market.

2) Information equipment

Korea also enjoyed a USD 6.4 billion information equipment trade surplus at the end of 2004, up USD 400 million from the previous year. Trade in CPUs recorded a USD 400million deficit but there has been increasing demand for the replacement of peripheral devices. PC exports are expected to decline as China begins to emerge as the largest PC maker in Asia and as Korean manufacturers relocate their production facilities to China.

3) Broadcasting equipment

In the first half of 2004, broadcasting equipment exports have surged as a result of

growing demand by large-screen, high-resolution TVs. Increase of DTV exports are attributable to its high quality, competitive prices, and diverse product lines.

4) IT components

At the end of 2004, Korea recorded an IT component trade surplus of USD 2.6 billion. This was attributable to the market rebounding, a product portfolio that focuses on more advanced high-value added products, and rising exports in flash memory, especially for mobile products. Growing demand for DRAM in new information equipment is assisting the recovery of the DRAM market. However, increased imports of non-memory chips used for cutting-edge IT products mitigated further increases in the IT component trade surplus.

software

Exports of package software, a high-value added sector, increased 110.7% from USD 196 million in 2003 to USD 413 million in 2004. In 2004, key export destinations included China, Japan and the U.S. Imports mainly hail from Japan and China.

[Table 6-1] Import & Export of the IT Industry

		(unit : USD 1Million)				
Classification		2000	2001	2002	2003	2004(P)
Export	IT Equipment	51,033	38,241	45,967	57,165	74,213
	Software	165	312	304	196	413
	Total	51,199	38,553	46,271	57,361	74,626
Import	IT Equipment	34,920	27,312	30,202	35,881	40,301
	Software	550	606	649	545	480
	Total	35,472	27,918	30,851	36,426	40,781

Note. : (P)= Preliminary Estimates

Source : Korea Association of Information & Telecommunication(KAIT), 2004

II. Support for the IT Industry's Overseas Ventures

Diversifying export markets and items

In order to explore new IT markets, the government plans to strengthen govern-

ment-wide cooperation, dispatch Korean marketing mission teams composed of high-ranking members from the private and government sectors abroad, support Korean participation in overseas exhibitions, and build a global human resource network by inviting IT personnel from developing countries to Korea for education. These programs are designed to promote international awareness about Korea's advanced IT industry and to assist the Korean move to develop markets overseas.

The Korean government has made efforts to support IT companies' foray into overseas markets and attract foreign investment into the Korean economy.

Promoting overseas marketing activities

1) Assisting IT SME participation in overseas exhibitions

To assist the Korean IT industry's move into overseas markets, the government has supported promising IT enterprises to attend IT exhibitions around the world. This assistance program was started in 1998 to help SMEs, with excellent products and technologies but lacking of financial resources, experience and information to enter overseas markets.

2) Holding IT product road shows abroad and dispatching expert groups in search of new markets

In 2004, Korea publicized its elevated status as an IT power in regions such as Southeast Asia, Europe, Latin America and North Africa. It dispatched groups of people from the private and government sectors abroad to explore new markets to facilitate the export of IT technologies and products. These groups attempt to secure cooperation channels with foreign companies and enhance the international credibility of Korean companies to expand opportunities to present Korean CDMA and other IT technologies.

Deploying information systems for overseas ventures and strengthening marketing activities

1) Deploying DB on overseas ventures and attracting investments

To support Korean IT companies' foray into overseas markets and to attract foreign investment, the MIC set up the 'Comprehensive IT Export Information System' in 2003. After 2004, the government plans to expand the system to execute a variety of projects. Such projects include building an IT export information hub in Northeast Asia, setting up government-wide information databases and systems on IT export, establishing a 'Cyber Biz Room' and evaluating performances of IT companies which are doing business abroad.

2) Strengthening marketing activities on 'IT Korea'

To publicize Korea's image as an IT powerhouse, the government distributes its PR video tapes and bi-monthly IT journal (IT KOREA Journal) to key entities at home and abroad. It also provides a variety of support for production and distribution of publications designed to publicize Korean IT SMEs abroad. The government also arranges PR tours to the Korean IT industry and industrial field studies targeting opinion leaders at home and abroad.

Laying the foundation for overseas expansion through strengthened efforts for the global digital bridge

1) Training IT personnel from developing countries

The MIC trains IT policy makers and CEOs from developing and semi-developed countries. This program aims to show participants the current status of 'Broadband IT Korea', introduce the nation's IT diffusion model, and build friendly human networks with overseas IT personnel.

2) Building Information Access Centers in developing countries

Korea builds Information Access Centers composed of Internet plazas, computer labs and seminar rooms in digitally underprivileged countries. This project seeks to provide informations to be accessible. At the same time, the center functions as a PR center that enhances understanding about Korea's advanced IT industry and digital culture. In the mid to long-term, Korea plans to form a strong partnership with key countries of each region and use them as a stronghold when the Korean IT industry makes inroads into overseas markets.

3) Dispatching Internet Youth Volunteers abroad

The Internet Youth Volunteers project dispatches IT personnel to technology-deprived countries to provide computer literacy education to local government officials and residents while introducing 'IT Korea.' The government hopes to use this program to make Korea's advanced digital culture more widely known to developing countries and pave the way for overseas expansion of Korean companies.

4) Joint operation of DGF-KTC with the World Bank

MIC joined forces with the Development Gateway Foundation(DGF) of the World Bank to establish the Development Gateway Foundation-Korea Training

The MIC has several programs designed to provide digital opportunity to developing or semi-developed countries, which include IT training, computer literacy education and building networks.

Center (DGF-KTC) in December 2001. This center helps to bridge the global digital divide by providing both long distance and on-the-spot IT training for IT human resources in developing countries.

5) Special cooperation for bridging the digital divide in East Asia

The MIC has tried to strengthen its policy influence in the economic and industrial sectors with an end to transforming the nation into an economic hub of Northeast Asia by actively addressing the digital divide. As part of such efforts, the MIC has carried out a 'Special Cooperation Project for Bridging the Digital Divide in East Asia' since 2002. Activities of this project include the dispatch of policy advisor groups to ASEAN member countries, technology transfer to grow their IT industry, and technological cooperation between IT research institutes.

[Table 6-2] *Major Projects to Bridge the Global Digital Divide*

Category	Project Name	Project Content	Outcome	Plan for '05
Invite foreign experts for IT education	Operate the World Bank DGF education center	KTC was set up in Seoul with World Bank in November 2002 to support IT HRD in developing nations.	553 persons ('02-'04)	100 persons
	Invite foreign IT experts for IT education	Since 1998, government officials & private CEOs in ASEAN, CIS, Eastern Europe, Latin America, Middle East and Africa have been invited for IT education that lasts from one to 12 weeks.	1,555 persons ('98-'04)	265 persons
	Support for getting master's degree or doctorate diploma in Korea	Assistance has been made to government officials & next-generation core manpower in Asia-Pacific region for master's degree or doctorate diploma in Korea.	80 persons ('99-'04)	28 persons
Establish infrastructure	Information Access Center in developing countries	Assist developing nations to establish multi-purpose information access facilities with computer education lab, Internet plaza and seminar rooms.	6 facilities ('02-'04)	2 facilities
	International IT Cooperation Center	Provide public-sector IT integration consulting service & launch pilot project in Latin America.	1 facility	1 facility
Dispatch experts	Overseas Internet Youth Volunteer	Since 2001, university students or general people have been dispatched as volunteers to offer computer literacy education to local residents in developing nations.	1,026 persons ('01-'04)	320 persons
	IT Policy Advisory Group	IT experts are dispatched to developing nations to assist them to establish IT-related acts, system and road map.	6 nations	9 nations

3. Foreign Investment in IT

I. State of Foreign Investment in IT

Foreign direct investment in Korea has declined by an average of 28% from 2001 to 2003. Backed by the global economic recovery, strong government incentives and activities to draw foreign investment, this trend reversed itself in the first quarter of 2004 and has continued upward. FDI reached USD 12.8 billion by the end of 2004, an 97.5% increase over 2003.

Investment volume has drastically grown as a result of Japanese and U.S. investment. The manufacturing sector has seen the sharpest growth. Greenfield investment has sharply increased while M&A activity has decreased. Capital inflows of USD 10 million or more have risen while FDI flows of less than USD 1 million has decreased. With foreign investment in the IT sector back on the upswing in 2003, it grew to USD 32 billion in 2004, a 217% increase over the same period of 2003.

[Table 6-3] *Yearly Trends in Foreign Investment*

Classification	(unit: USD 1Million, %)					
	2000	2001	2002	2003	2004	Total
Amount	15,217	11,292	9,103	6,468	12,785	54,865
(Growth rate)		(-28.0)	(-19.4)	(-28.9)	(+97.5)	

Source : Ministry of Commerce, Industry & Energy (MOCIE), 2004

[Table 6-4] *Foreign Investment in the Korean IT Sector*

Classification	(unit: USD 1Million)				
	2000	2001	2002	2003	2004
Equipment	1,865	1,603	403	296	2,812
Service	430	289	124	513	51
Software	449	164	103	201	340
Total	2,744	2,065	630	1,010	3,203
IT/Entire Industry	18 %	24.3 %	6.9%	15.6%	25%

Source: Ministry of Information & Communication(MIC), Korea Association of Information & Telecommunication(KAIT), 2004

II. Global IT R&D Centers

In order for Korea to become an advanced economy, it needs to secure technologies, and transform the environment into a technologically advanced and high-value added industrial environment. To this end, it is important to concentrate efforts on technological development and attract R&D centers from renowned foreign companies to Korea.

Over the years, most foreign R&D centers in Korea focused on such functions as maintenance of sold products, localization and design development rather than carrying out practical R&D functions. Yet, with the Korean president's visit to the U.S. in 2003, the MIC started inviting global IT companies to set up an R&D center in Korea. By the end of 2004, five global IT companies -Intel, IBM, Fraunhofer, Siemens and HP- decided to open their R&D centers in Korea as anchor tenants. Also, the MIC signed an MOU for establishing an R&D center with Agilent, APCRC, Cambridge University, and Caspian.

4. Global IT Trade Negotiations

I. Response to Multilateral Trade Negotiations

The WTO DDA multi-lateral negotiations and bilateral trade negotiations provide strong momentum to the world wide trend of liberalization of trade in goods and services. Korea is an active participant in these international negotiations.

In November 2001, the 4th WTO Ministerial Conference launched a new round of trade negotiations-the Doha Development Agenda(DDA)-setting out the path to bring down trade barriers of all countries and achieve the greatest possible trade liberalization of trade in goods and services. Afterwards, the 5th WTO Ministerial Conference in Cancun, Mexico, 2003 collapsed because it failed to bridge the gap between developed and developing countries over primary issues like agriculture and the so-called "Singapore" issues. In August 2004 WTO members adopted a Framework Agreement that lays down a set of guiding principles and parameters for future negotiations. With this Framework in place, the DDA negotiations are back in full swing. A specific deadline has been set to complete the Round by the next meeting of the WTO Ministerial Conference in Hong Kong in December 2005. Korea is predicted to face strong challenges over issues such as foreign ownership, cross-border supply restric-

tions, service classifications and regulation. Negotiation on non-agricultural market access is ongoing. This includes expanded tariff exemption on IT products in line with modalities.

The APEC summit in November 1995 adopted the 'Osaka Action Agenda' that states the will of APEC members to develop MRA for telecommunications equipment. The contents of the MRA document for use by APEC members was completed in September 1998. Recently, APEC member economies are examining technical requirements set out by each country to identify standard equivalences. This will be followed by discussions of new MRAs on technical standards.

In response to the proliferation of regional trade agreements, Korea signed a Korea-Chile Free Trade Agreement (FTA) in October 2002. The agreement was ratified by the National Assembly in January 2004, and entered into force in April 2004. More FTA negotiations are underway. Korea has tentatively concluded an agreement with Singapore. FTA negotiations with ASEAN and EFTA took place in 2005.

The IT sector has opened up considerably due to the conclusion of the WTO Information Technology Agreement (ITA). Primary interests lie in opening up the telecom service market and concluding MRAs between FTA signatories.

II. Strengthening Bilateral Trade Diplomacy

Korea's telecom market environment is similar to that of advanced countries with its open market and deregulation. For this reason, Korea's telecom sector is facing less trade pressure from developed countries. On a more detailed level, there remain some differences and potential elements of conflicts. Thus, Korea will come up with preventive measures in pursuit of mutual understanding and cooperation to avoid unnecessary disputes.

Korea hopes to become the major IT hub of Northeast Asia by leveraging on its IT profile in the international community.

I. Global & Regional Cooperation

Korea is consolidating its footing to become an IT hub of Northeast Asia by vitalizing the China-Japan-Korea IT Ministerial Conference and Director-General Meeting, which was originally launched in 2002. In a bid to strengthen weak cooperation in the IT field with Middle East countries, Korea dispatched a ministerial-level delegation to five Middle East countries in March 2004 and briefed the government, press and IT businessmen in these countries about where 'Broadband IT Korea' stands and its future. Korea also sent a delegation of government and private-sector representatives, led by a Vice-Ministerial level government official to Russia, Austria, and Czech in May 2004, to strengthen the collaborative relationship with Russia, a member of BRICs, and new EU members.

Thanks to the raised profile of Korean IT in the international community, many countries around the world dispatched delegations to Korea to have them experience the development of Korean IT firsthand, exchange views on IT policy, and visit major IT companies in Korea. The MIC will continue to implement various cooperative efforts such as signing the IT Cooperation Arrangement, hosting policy symposiums, and dispatching Korean delegations with representatives from the government and private sectors abroad.

II. Activities in International Organizations

ITU

1) Overview

The International Telecommunication Union (ITU) is the oldest and largest international organization devoted solely to telecom issues. It coordinates global telecom issues and member countries' different telecom policies by extending support for developing countries, international cooperation, regulation, and standardization.

2) Korea's major activities

Korea was elected to a four-year council member post for a fourth consecutive term in 2002. Since it became a council member for the first time at the 1989

Plenipotentiary Conference in Nice, Korea has continuously participated in ITU's important policy-making process.

In the first phase of the World Summit on Information Society (WSIS) held in 2003, Korea actively joined efforts to adopt the WSIS Declaration of Principles and Action Plan. These state the vision of the information society's future and action strategies. The MIC followed up these measures and action plan by concluding a MOU to develop a digital divide index with the ITU in 2004, and is carrying out relevant projects. The MIC also hosted the 'ITU-MIC New Initiatives Symposium & Workshop' under the theme of BcN and mobile communications in early March 2004.

APT

1) Overview

The Asia Pacific Telecommunity (APT) was founded as an inter-governmental telecom body in the Asia Pacific region. The APT pursues the balanced development of telecom businesses with economic and social growth in the region. It also seeks to address overall telecom problems and facilitate the exchanges of policy, technology and human resources between telecom institutes while coordinating differences in views among members.

2) Korea's major activities

The MIC has participated in APT activities since the organization's inception in 1979. Many Korean companies are working as affiliate members. Jong-Soon Lee, former Director-General of the International Cooperation Bureau, MIC, was elected to serve as the 7th and 8th Executive Director of the APT secretariat, and senior deputy director Seung-Gon Oh was seconded to the APT and is currently working as a radio expert. Korea is in an advantageous position to play a leading role in the telecom sector of this region, and the government supports Korean companies' move into this marketplace.

Korea has run training programs targeting IT personnel from APT developing countries since 1998 through its supplementary budget contribution. At the end of 2003, the number of people in training programs totalled 450 from 27 countries. The 27th APT Management Committee reviewed its 2003 programs and discussed new programs for 2004 on the basis of the revised APT constitution

Korea has participated in many inter-governmental telecom bodies especially in the Asia-Pacific region.

adopted at the 9th session of the APT General Assembly. In this process, Korea obtained good results. It received an approval for its suggestions on the provisions of the APT documents and hosting the APT Wireless Forum in connection with ITU Asia Telecom, which was held in Busan, Korea, 2004.

In August 2003, Korea held the 7th Asia Pacific Telecommunity Standardization Program (ASTAP) forum and next-generation network workshop. Through these events, Korea drew up recommendations for ASTAP activities and engaged in discussions on standardization activities including regional prep work for the World Telecommunication Standardization 2004 (WTSA-2004). In June 2003, Korea participated in the 23rd APT Study Group meeting that considered adopting 33 new research projects with a three-year study cycle. It helped raise awareness of Korea's technical advances, and learned about regional technological development trends and information.

APEC

1) Overview

The Asia-Pacific Economic Cooperation (APEC) was established to promote economic cooperation in the Asia-Pacific region. It attempts to realize trade and investment liberalization (Bogor Declaration), achieve equal development, and narrow the economic gap across the region through economic and technological cooperation among members.

2) Korea's major activities

Korea actively participated in the 29th(March 2004, Hong Kong) and 30th(September 2004, Singapore) meetings of APEC TEL. At the meetings, Korea introduced its advanced IT technologies and policies and presented the current developments and results of APEC projects led by Korea such as APII Test-bed project, International B2B Interoperability project, Internet Traffic Measurement and Analysis project, and Asia-Pacific Grid Implementation project. Particularly, Korea suggested holding workshops to establish consensus in conducting the Internet Traffic Measurement and Analysis project and the Asia-Pacific Grid Implementation project, and to promote regional cooperation. By doing so, it induced the support and active participation of members. Furthermore, Korea was active in leadership roles such as co-vice chair(2003) and chair(2005) of APEC TEL (Dr. Inuk Chung, vice president of Korea

Korea has an active leadership role in APEC TEL, and is a major presence in the discussion of regional IT policy.

Information Strategy Development Institute), Business Facilitation Steering Group (BFSG,2003) convenor (Young-suk Lee, senior researcher of National Computerization Agency), and Liberalization Steering Group(LSG,2003) deputy convenor (Dr. Bumjin Jang, KISDI). Through such activities, Korea had its voice heard in the discussion of regional IT policy and enhanced its image as an IT power.

OECD

1) Overview

The Organization for Economic Cooperation & Development(OECD) was established on Sep. 30, 1961 with the goals of facilitating its members' economic growth, contributing to the development of the global economy, assisting developing countries and expanding world trade under the principle of multilateral free trade. OECD headquarters are in Paris and the membership consists of 30 countries.

2) Korea's major activities

Korea has made efforts to establish strong cooperative bonds with the OECD. As part of such efforts, the Korea Information Society Development Institute (KISDI) teamed up with the OECD to organize the 1995 International Conference the 5th OECD Workshops on the Economics of the Information Society in 1996. Korea also requested the OECD to undertake a broad review of its national regulatory practices and domestic regulatory reforms. Through the OECD Review of Regulatory Reform on the telecommunication sector in 1999 and its Reviews of Regulatory Reform on OECD countries in 2000, Korea was able to raise its credibility in the international community.

The Korean government contributed to the promotion of IT exports by publicizing the advanced state of the Korean IT industry. To expand broadband penetration worldwide, it also hosted the second OECD Broadband Workshop, the 28th OECD Telecommunication and Information Services Policy (TISP) meeting, and the 12th OECD's Working Party on Information Economy (WPIE) meeting in 2002.

In the meantime, Director Won-Ki Min of the MIC was elected to chair the WPIE in June 2003. MIC Senior Deputy Director Suk-Kyun Jung was chosen

As Korea is an active member of OECD, several workshops on the economics of the information society were held in Korea, hosted by the Korea Information Society Development Institute (KISDI).

as vice chair in June 2004. When the OECD's WPIE held the first round of peer review meetings in December 2003 to examine the status of ICT diffusion in business, Korea participated in the meeting as one of the reviewed countries and raised its profile by providing insightful input and listening to comments from other participants. In September 2004, the MIC also hosted the OECD Workshop on Spam.

6. Promoting Inter-Korean IT Exchanges and Cooperation

Inter-Korean IT cooperation is important for smooth dialogue between Seoul and Pyongyang and for joint economic projects.

So far, inter-Korean IT cooperation has been limited to the provision of telecommunication support to secure smooth dialogues between Seoul and Pyongyang or other joint economic projects such as the construction of light-water reactors in the North or the Mt. Keumgang tourism. Since the South-North Summit Talks in June 2000, economic cooperation at the private level has been relatively active centering around the software sector though it is still considered at the beginning stage. As of December 2003, the government approved a total of six Inter-Korean IT cooperation projects that amount to USD 93.33 million in investment.

A direct telecom line is set up for the inter-Korean exchanges by necessity, but private-level exchanges are almost dependent on indirect telecom lines. As of 2004, a total of 66 telecom lines had been built. However, the lines for the construction of the light water reactors are not under operation due to the one-year suspension of the project in December 2003. Telecom exchanges between South and North are mostly between South Koreans within the business zone of North Korea and those in South Korea. Communications for inter-Korean contacts, dialogues or military purposes are done via a third country.

South-North exchanges in IT software began with the joint development of software between Samsung Electronics Co. and its North Korean counterpart. This joint project aims to develop software programs in the North and import them to the South. No purchases are made from North Korea, and the South plans to supply free software to the North. North-South exchanges in IT hardware since 1998 consist mainly of consignment or toll processing, and makes

the best use of low cost labor. These production contracts are limited to TV, telephones, microphones, small-size DC monitors, small switches and ADSL splitters. These exchanges have not been substantial because of North Korea's high rate of product defects, delayed delivery of goods, high indirect costs (such as logistics costs and customs clearance fees), and low competitiveness in toll manufacturing costs. At present, there is a wide gap in the advancement of telecom infrastructure between the South and North, and this disparity is likely to deepen over time. Under the circumstances, if the two Koreas are reunited, it will hinder the process of integrating the two economies and narrowing the gap.

With the possibility of reunification in the near future, IT will play a key role in bridging the social, cultural and economic gaps between the two Koreas.

If reunification takes place in the absence of sufficient inter-Korean IT cooperation, there will be an enormous social cost to resolve social and cultural differences between the South and the North. With that in mind, the government stepped up its telecom service support for inter-Korean exchanges and economic cooperation. For instance, it arranged meetings of separated families through video telephones, increased telecom lines to support the Kaesong Industrial Zone(KIZ) and Mt. Keumgang tourism, and conducted research on issues such as inter-Korean telecommunication standardization, North Korea's telecom infrastructure upgrade and ways to raise funding in preparation for mid- and long-term inter-Korean exchanges and cooperation in telecommunications.

In 2005, the MIC plans to work on those projects that will have great but gradual spillover effects. To this end, it is first formulating various support measures to make sure telecom infrastructure in the Kaesong Industrial Zone and direct telecom lines between the zone and South Korea can be built without problems. In addition, the MIC is examining an assistance program of upgrading North Korea's outdated telecommunication network in the belief that it will spark the development of the North's telecom sector, and consequently make the reunification of the two Koreas more smooth. In the project's initial stage, telecom networks will be upgraded in the inter-Korean economic cooperation zone. Over time when the political environment is stabilized and there is sufficient national consensus, covered areas are likely to be expanded. To do so, the Korean government plans to sign an 'Inter-Korean Telecommunication Agreement' through consultation with the North.

Along with this, the MIC plans to review North Korea export regulations and

Projects such as mobile communication and international call gateway projects in North Korea and tourism telecom networks in Mt. Keumgang are the first steps toward integration of the telecom sectors of the two Koreas.

overhaul the legal system by consulting relevant ministries to ensure inter-Korean exchanges in the IT sector can take place on a long-term strategic basis. In preparation for post-reunification, the MIC also plans to organize the North-South IT Standard Consultation Body to secure a single standard in the IT sector.

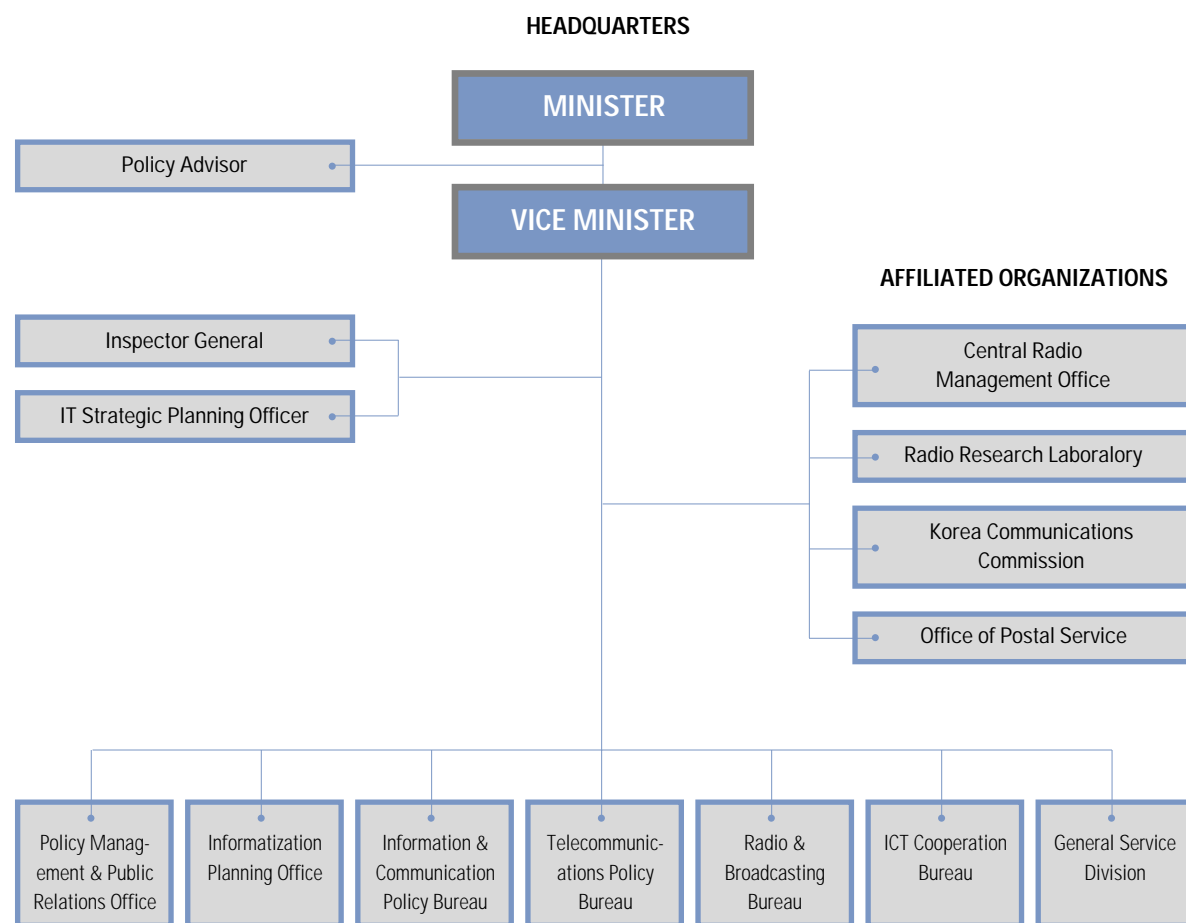
The MIC carries out various projects after review. Such projects include mobile communication and international call gateway projects in North Korea and expanding tourism telecom networks in Mt. Keumgang. It also plans to support inter-Korean exchanges and cooperation in the IT sector, and strengthen research activities on North Korea which would entail researching the current status of North Korea's telecom sector and relevant laws in preparation for integration of the telecom sector of the two Koreas. To this end, the MIC plans to set up a North Korea IT Development Center within the KISDI.

Organization Chart and Functions of MIC

Major Statistics

APPENDIX

I. Organization Chart & Functions of MIC



Headquarters

Legislation	Major Provisions
Policy Management & Public Relations Office	Responsible for setting and coordinating goals and objectives of major operations; finance, accounting and budget management of the MIC; examining related laws and acts; computerization of the MIC; emergency planning
Informatization Planning Office	Formulating and coordinating policies on informatization promotion; setting up implementing plans for information infrastructure; establishing and managing the Public Information Network; matters concerning information privacy protection and security policy
Information & Communication Policy Bureau	Formulating and coordinating telecommunications policies; fostering the information telecommunications industry; managing technological development and standardization
Telecommunications Policy Bureau	Regulating and supporting fixed/wireless telecommunications; promoting and supporting enhanced-telecommunications service providers; promoting fair competition; licensing facilities-based telecom service providers
Radio & Broadcasting Policy Bureau	Formulating basic policies on radio, broadcasting and satellite projects; fostering the radio and broadcasting industry; developing technologies for radio frequency management; licensing the radio station and broadcasting system
ICT Cooperation Bureau	Coordinating international cooperation policies in information technology, telecommunications services and postal services sectors; establishing basic policies on international cooperation and organizations; carrying out IT-related trade negotiations and supporting overseas telecommunications operations; supporting international efforts to bridge the digital divide

Affiliated Organizations

Legislation	Major Provisions
Central Radio Management Office	Monitoring and management of radio frequency
Radio Research Laboratory	Research on radio technology and information & communication technology
Korea Communications Commission	Deliberating issues concerning: fair competition environments and consumer protection of telecommunication services; arbitrating disputes among telecommunication service carriers and between users and carriers.
Office of Postal Service	Formulating basic policies on postal services and tariffs; Planning on delivery and transport of mail; formulating basic polices on postal banking services; formulating basic polices on postal banking services; managing the Postal Banking Fund; managing the MIC's finance and accounting

II. Major Statistics

● Total Population

(unit : person)

Year	2000	2001	2002	2003	2004
Population	46,126,101	47,353,519	47,615,733	47,849,227	48,082,163

Source : National Statistical Office (NSO)

● Exchange Rate

(basis: annual average, unit: won)

Year	2000	2001	2002	2003	2004
Annual average exchange rate	1,131.1	1,129.9	1,250.7	1,191.9	1,143.7

Source: The Bank of Korea (BOK)

1) Number of Telecom Service Subscribers

(unit: 1,000 persons)

Year	2000	2001	2002	2003	2004
Facilities-based Telecom Service	57,955	71,279	103,273	110,959	118,178
Resale Telecom Service	1,332	1,729	2,325	2,423	2,423
Value-added Telecom Service	50,136	55,120	54,500	53,202	69,497
Cable TV Broadcasting Service	9,992	10,326	11,435	12,548	12,552

Note : Broadcasting service subscribers refer to households subscribed to cable TV

Source : Korea Association of Information & Telecommunication(KAIT), CATV Broadcasting Association

2) Local Call

Year	2000	2001	2002	2003	2004
No. of Telephone Lines (1,000 lines)	25,863	25,792	25,735	25,800	26,058
No. of Subscribers (1,000 persons)	25,863	25,584	25,526	25,590	25,900
No. of Subscribers per 100 Persons	55.0	54.0	53.6	53.4	53.9

Note : Main Telephone Lines + ISDN channels + ISDN subscribers

Source : Korea Agency for Information & Telecommunication(KAIT)

3) Mobile Phone

Year	2000	2001	2002	2003	2004
No. of Facilities (1000 lines)	39,225	66,899	56,335	56,335	56,335
No. of Subscribers (1000 persons)	27,541	29,045	32,342	36,046	36,586

Source: Ministry of Information and Communication (MIC) , Korea Association of Information & Telecommunication (KAIT)

4) Number of Wireless Communication Service Subscribers

(unit: persons)

Year	2000	2001	2002	2003	2004
Radio Paging	568,225	235,628	140,284	73,160	45,314
TRS	113,066	182,834	210,894	279,896	311,457
Wireless Data	73,842	79,855	80,499	104,608	111,051

Source: Ministry of Information and Communication (MIC)

5) International Fixed Telephone Costs to USA (per 3 minutes in peak hours)

(unit : KRW)

Classification	3 digit(Facilities-based Telecom Service)	5 digit(Resale Telecom Service)
Average Tariff	831	490

Note : 4 facilities-based telecom operators have 3 digits on average while 8 major resale telecom operators have 5 digits on average.

6) Number of Broadband Internet Subscribers

(unit: 1,000 persons)

Year	2000	2001	2002	2003	2004
xDSL	2,074	4,388	5,664	6,436	6,777
Cable Modem	1,386	2,530	3,554	3,828	4,079
Metro Ethernet & B-WLL	477	876	1,181	910	1,061
Satellite	9	12	6	5	4
Total	3,946	7,806	10,405	11,178	11,921

Source: Ministry of Information and Communication (MIC)

7) PC Supply

(unit: 1,000 PCs, %)

Year	2000	2001	2002	2003	2004(P)
Home PCs	11,060	12,812	13,913	15,173	16,690
Number of PCs (total)	7,555	9,683	9,589	9,074	9,511
Business PCs	18,615	22,495	23,502	24,248	26,201
PC penetration rate on a total population	40.3	47.5	49.4	50.7	54.5

Note: 2004(P) figure is NCA estimate

Source: National Computerization Agency (NCA)

II. Major Statistics

8) Internet Users & Usage Rate

(Unit: 1,000 persons, %)

Year	2000	2001	2002	2003	2004
Internet User	19,040	24,380	26,270	29,220	31,580
Internet Usage Rate	45.2	56.0	59.8	65.8	70.5

Note: Internet Usage Rate is on the population that people is over 6 years old
Source: Korea Network Information Center (KRNIC)

9) Households Online

(unit : %)

Year	2000	2001	2002	2003	2004
Household online ratio	70.1	82.3	89.3	91.5	92.8

Note: households online ratio = households with Internet access/households equipped with PC
Source: Korea Network Information Center (KRNIC)

10) Online Banking Users

(unit: 1,000 persons)

Classification	1999	2000	2001	2002	2003	2004
Online Banking Users	1,230	4,090	11,310	17,710	22,754	24,270

Source: The Bank of Korea (BOK)

11) E-Commerce Transaction

(unit : KRW 1 Trillion)

Year	2000	2001	2002	2003	2004
Total Amounts	57.5	119	177.8	235.02	314

Source: National Statistical Office (NSO)

12) E-Signature Users

(unit : 1,000 persons)

Year	2000	2001	2002	2003	2004
Users	52	1,917	5,772	8,713	10,553

Source: Korea Information Security Agency (KISA)

13) Amount of Spam Mail per Person

(unit : Case per day)

Classification	2001	2002	2003	2004
Spam mail per a day	4.7	34.9	28.8	13.8

Source: Korea Information Security Agency (KISA)

14) Numbers of Internet Security Server

(unit : piece)

Classification	2001	2002	2003	2004
SSL	772	1,126	1,748	1,526
Security Server	295	715	1,776	1,924
Total	1,067	1,841	3,524	3,450

Source: Korea Information Security Agency (KISA)

15) Sales Revenues of the IT Industry in Korea

(unit : production, domestic sales-KRW 100Million, import & export-USD 1Million)

Classification	2000	2001	2002	2003	2004(P)	
Production	IT Service	28,689	36,329	42,976	41,605	42,920
	IT Equipment	105,885	99,091	127,724	141,579	164,270
	Software	10,732	14,727	18,223	18,440	18,726
	Total	145,305	150,147	188,923	201,623	225,916
Domestic Sales	IT Service	28,688	36,329	42,976	41,605	42,920
	IT Equipment	87,656	97,680	125,752	116,211	148,152
	Software	11,167	15,106	18,656	18,856	18,803
	Total	127,511	149,115	187,384	176,671	189,875
Export	IT Service	51,033	38,241	45,967	57,165	74,213
	IT Equipment	165	312	304	196	413
	Total	51,199	38,553	46,271	57,361	74,626
	Import	IT Equipment	34,920	27,312	30,202	35,881
Software		550	606	649	545	480
Total		35,472	27,918	30,851	36,426	40,781

Source: Korea Association of Information & Telecommunication (KAIT)

16) Foreign Investment in the IT Sector (Investment amount reported)

(unit: USD 1Million)

Classification	2000	2001	2002	2003	2004
Equipment	1,865	1,603	403	296	2,812
Service	430	298	124	513	51
Software	449	164	103	201	340
Total	2,744	2,065	630	1,010	3,203
IT/Entire Industry	18%	24.3%	6.9%	15.6%	25%

Source: Ministry of Information and Communication (MIC)

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