

50-Year Footprints of Korean e-Government 1967-2017

The Greatest Leap
in Korean History



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Preface



Kim Boo Kyum

Minister of the Interior and Safety

As Confucius said, “At the age of 50, I knew the will of heaven,” 50 years of time seem to imply something has matured and reached a new, higher level of advancement, beyond the simple numerical meaning that half a century has passed. In this regard, the year 2017 is a highly significant milestone for Korea, as it has been 50 years since the government first started implementing e-Government policies and projects.

As many people would agree, the past 50 years of e-Government in Korea have seen continued innovation and development unprecedented in the world history. Since 1967 when the Economic Planning Board first introduced a mainframe computer to process census data, Korea has positioned itself as the world’s true e-Government pioneer, with more than 18,000 information systems developed. Korea’s e-Government is now highly recognized worldwide, with the achievements comparable to the “Miracle of the Han River.”

In addition, through continuous investment and reforms, such as the establishment of high-speed information networks, the launch of online administrative services, the establishment and operation of the National Computing and Information Agency, and the

enactment of the e-Government Act, the Korean citizens can now easily access public services through “Minwon24” and “HomeTax,” which are available 24 hours a day.

As a result of these efforts and achievements, Korea ranked first in the UN E-Government Survey for three consecutive terms in 2010, 2012 and 2014, and its e-Government is now being exported to 72 countries around the world, reaching a total volume of over 2.3 billion dollars as of 2015.

With the rising demands of individual citizens for more specific and diversified administrative services along with economic and social development, there has been an increasing need for fundamental redesigning of existing public services to meet such expectations. Furthermore, the 4th Industrial Revolution is unfolding before us, which will fundamentally alter the way we live and work based on interactions among machines, people and industries, using technologies like the Internet of Things (IoT), cloud computing, big data, and artificial intelligence (AI).

Amid such tremendous changes, we need a new strategy to reform the social structure as a whole and take a new leap forward, and I believe e-Government lies at the heart of such strategy.

The future e-Government should provide infrastructure that empowers citizens to take the lead in developing administrative policies and services, far beyond just participating in the policymaking process. And, the government needs to create an ecosystem suited for the era of the 4th Industrial Revolution by developing and spreading intelligent e-Government services, and to give new business opportunities by striking a balance between the use of wide-ranging, government-owned big data and the value of personal information protection. The foundation for data-driven, scientific policy-making also needs to be laid, together with the next-generation, cloud-based administrative information systems.

At this critical juncture, we publish ‘The 50-Year History of Korean e-Government,’ which will serve as a valuable cornerstone for another leap forward for the next promising 50 years, by looking back on how our e-Government has come so far.

I would like to express my sincere gratitude to Chief Editor Mun-seok Ahn and all editors and writers who have devoted their time and efforts to this publication, hoping our next one, “The 100-Year History of Korean e-Government,” which is likely to be published in 50 years, will feature not only the AI-based social and economic systems for all citizens, but also infinite potentials of e-Government finally realized beyond our imagination.

Congratulatory remarks



Matt Hancock

Minister for Digital Department for Digital, Culture, Media and Sport,
Her Majesty's Government.

In 1967 Korea's e-Government journey began with the use of the IBM1401 computer in the national census. That same year the Internet's heart began to beat when the UK's National Physical Laboratory conducted a revolutionary experiment in the transmission and re-transmission of data around the nodes of an embryonic computer network.

50 years ago our two countries were pioneers in using digital to transform the way people live, work and interact with government. And we continue to lead the world in digital government today.

That's why, working with Estonia, Israel, New Zealand and the UK, South Korea was a founding member of the Digital 5 (D5) in 2014. D5 countries share the same mission: to transform the relationship between individual and state and in doing so, improve people's lives. To achieve this, collaboration is vital. We must work together to share best practice, develop solutions to common issues, and harness the potential of digital to improve our public services - enabling us to provide a better service to users.

Through the D5 the UK and South Korea have collaborated on important issues such as using technology to improve emergency services, teaching coding in schools, and digital signatures. We share expertise through open source, open standards, and open data. I believe that with the emergence of new technologies such as IoT, big data and AI, we can go even further together to create innovative solutions to build public services fit for the 21st century.

I commend South Korea's commitment to this mission in the past 50 years. Their achievements in digital government are recognised internationally; South Korea have ranked No 1 in the UN's world e-Government ratings three times. I have every confidence they will continue to be a leader on e-Government using the new technologies and opportunities brought by the 4th Industrial Revolution, and in helping other countries to develop their digital governments.

South Korea and the UK have a long history of partnership and friendship, this includes our collaboration on e-Government. I look forward to our continued partnership to develop world-leading public services and build the global digital economy.

Congratulatory message



Virginia M. Rometty,
Chairman, President and Chief Executive Officer

The Honorable Kim Boo-kyum
Minister of the Interior and Safety
Republic of Korea

Dear Minister Kim:

Congratulations on the 50th anniversary of e-Government in Korea. IBM has been proud to partner with Korea as it has led in e-Government innovation for half a century.

As we look to a future enhanced by cognitive and cloud computing, IBM is committed to building an even closer partnership with Korea, dedicated to developing the country's public administration for the benefit of the Korean people.

Sincerely,

A handwritten signature in black ink that reads 'Ginni Rometty'. The signature is written in a cursive, flowing style.

Ginni Rometty

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About the Cover



The cover reflects the harmony between the retrospect of fifty-year history and the prospects of the Korean e-Government.

The footprints on the cover show the transformation of office supplies, from pen to the smart devices that are used today.

The footprints form an 'e' shape which symbolizes the efforts that were put into the establishment of the e-Government. The person headed towards the teageuk symbol signifies Korea's endless efforts in challenging itself to be the global leader in e-Government.

Also 'e-Government' written in different languages on the teageuk symbol, expresses the role of the world-leading Korean e-Government. The main color, theresian yellow, symbolizes the passion dedicated to realizing today's advanced e-Government—the greatest leap in Korean history.

CHAPTER

1

Laying the foundation of the e-Government

Section 1.

Sowing the Seeds for the Computerization of Administration

The year 1967 was a very significant year in the history of Korea's e-Government in that it was the year in which the Korean government first introduced a computer for data processing. Prior to the introduction of computers, public officials used to produce documents by writing on paper with a ballpoint pen and laying several pieces of carbon paper between the sheets in order to make copies. Today, half a century later, this old handwriting technique has been lost in the sands of time, and computer-based processing now plays an essential role in every sector of the economy, society, and culture as well as the formulation and implementation of national policies.

Computer-based task processing, in particular, has become an indispensable part of government administration, and as a result, has greatly contributed to improve efficiency and effectiveness in various policy areas. With the emergence of computers, information, and communication technology, Korean society as a whole has undergone a groundbreaking transition from the age of analogue to the age of digitalization. In this regard, the first-ever introduction of computers into government administration in 1967 has had significant historical implications, as it served as a gateway towards today's e-Government era.

In 1967, the Economic Planning Board decided to introduce the IBM 1401 model to save time and money spent on processing population census statistics. This led the government to appreciate the extent to which the use of computers in government administration could drastically improve efficiency. In September 1967, the Korea Institute of Science and Technology established its Electronic Computing Room, devoted to the development of an electronic calculation program that could replace the manual or punch card-based arrangement of each administrative body. In 1969, the government adopted the ultra-large computer CDC 3300 and started supplying computers and software technologies throughout Korea. With the introduction of CDC 3000, they laid the groundwork for the full-scale use of electronic administration by developing the Electronic Data Processing System (EDPS) for tasks such as telephone billing, government budget planning and allocation, customs administration, and export-related financial management.

During the 1960s, the Korean government became highly enthusiastic in incorporating computerized administration into government affairs, announcing its Five-year Plan for the Promotion of Science and Technology and launching the Ministry of Science and Technology. Recognizing the enormous benefits and potential of computers and computerization, the government also made efforts to produce domestic brands. In 1962, Dr. Man-yeong Lee assembled vacuum tubes to invent Korea's first-ever, small-sized analogue electronic calculator, but failed in reaching full commercialization.

During the 1970s, domestic companies were also driven to develop computers under their own brands, and finally in February 1972, produced Korea's first domestically produced computer, Sejong No.1. As part of this push toward computerization and efforts to localize the host computers that were in high demand, public and private jointly developed the computer, Tolerant, and the medium-sized computer, TICOM in 1991. TICOM was supplied to the National Basic Information System Project. Although these locally developed computers failed to replace foreign brands, the computer-related technologies and experiences fostered skilled workforce, which provided a solid foundation for Korea to become the global powerhouse in the fields of information and communication technology that it is today.

Section 2.

Computerization of Basic Administrative Work

1. Initiation of Policies for the Computerization of Public Administration and Establishing Organizational Structure

In 1967, ever since the Economic Planning Board first introduced computers in their work, the use of computers has increased in both the public and private sectors. In the public sector, the government actively promoted to computerize administrative processes to alleviate the growing fears that government agencies would no longer be able to manually handle their rapidly increasing workloads. This push toward computerization, however, raised concerns over the large outflow of foreign currencies that could occur if public organizations at each level adopted foreign brand computers without any government regulations. In January 1969, to address these issues, the government drafted the Comprehensive Development Plan of Electronic Calculation System. This plan was formulated to establish consistent development policy, such as the introduction of Electronic Data Processing System (EDPS), and to optimize its operation.

In April 1970, the government established the National Computer Center to promote government

agencies to perform their businesses in a scientific way. This was the first governmental data processing organization in charge of making comprehensive policies for computerization and informatization in Korea. At the time of its establishment, the National Computer Center was primarily responsible for achieving the following four main objectives: first, to establish basic policy for informatization; second, to expand shared administrative information systems to handle all computer-based tasks in a centralized manner, while putting a limit on the introduction of the electronic calculation system by each individual governmental organization. This was intended to curb unnecessary government spending and train key computerization personnel in each ministry; third, to provide a conducive environment for informatization by promoting the development of information processing technology and standardization; fourth, to promote and foster the information technology industry.

As computerized systems increased, computers were taken more seriously as a means of improving administrative efficiency rather than simply a tool for calculation. In response to the growing demand for computers, in 1974, the National Computer Center was transferred to the Ministry of Government Administration and was renamed the Government Computer Center.

2. Expansion of Computerization and the Raising Public Awareness

In the early 1970s, there were a couple of incidents that changed the intellectuals' perception of computers as tools used only for complicated calculations in science and technology fields and the general public's perception of them as awe-inspiring machines. One was the demonstration to the President on the computerization of budgeting by the Economic Planning Board in April 1970, and the other was the computerized billing system by the Ministry of Communication in 1971. These cases provided proof that computers could be used efficiently not only for scientific computing but also for large-scale data processing. In particular, the computerization of telephone bills served as a prime example of a successful example of a task that had previously been handled manually. This case served as a catalyst for the expansion of computerization in each ministry.

Public awareness of computerization also greatly increased during the 1970s due to the computerized grading of preliminary college entrance exams. Approximately 120,000 examinees took the preliminary college entrance exams each year, and prior to computerization, it took hundreds of people more than three days to check and mark each exam paper by hand. Following the landmark computerization of the grading of the exam in 1972, all college admission processes, from grading to admission screening, have been computerized to provide faster and more accurate results. Since 1972, other

public affairs, such as drawings for assignment of middle school to attend, have been computerized one after another.

Unfortunately, along with its benefits, computerization also brought with it some dysfunction. In October 1973, the first-ever, computer-related crime occurred in Korea involving the intentional rigging of an apartment lottery. This had a great impact on Korean society since people became aware that computers could also be used for criminal activities. At the same time, people came to realize that computers had become deeply embedded in every corner of their daily lives. The incident also greatly contributed to amplifying individual's and private companies' interest and awareness in computers.

Section 3.

Expanding Computerized Administration

1. Establishment and Full-fledged Implementation of Policies for Computerized Administration

In the mid-1970s, the Korean government moved beyond simply promoting computer-based administration, focusing on building scientific and efficient administration platforms. In June 1975, the Ministry of Government Administration announced its Master Plan for the Computerization of Administration. The plan, through the computerization of administrative tasks, aimed to cut government spending on manpower and related budget, while ensuring fast and fair handling of civil affairs. More specifically, the plan sought to establish an information system across all the central administration institutions and tiers of administrative districts in each province, city, county, town, and village over a period of seven years from 1975 to 1982. It also targeted 60 types of administrative tasks for computerization, ranging from the management of family registers and resident registration, the human resources management of government employees, passport issuance and immigration control, to tasks related to labor, crime, economy, information for taxation, agricultural statistics,

and permits and licenses.

In 1978, the government drafted its First Five-Year Master Plan for the Computerization of Administration (1978-1982) in order to comprehensively promote the computerization of administrative tasks that had been sporadically

undertaken at the national level. In June 1979, the government issued the Guidelines for the Computerization of Administration, providing the legal basis for the implementation of the plan.

The First Five-Year Master Plan for the Computerization of Administration targeted

Computerization of Administrative Affairs Aimed at Reducing Costs

Although the Ministry of Government Administration announced the First Master Plan for Computerization of Administrative Affairs, it was the Economic Planning Board – responsible for budget management – that led the initiative of introducing information systems in public administration even before the announcement of the Master Plan. The Economic Planning Board believed that building an administrative information system would reduce government spending in the long-term.

In the mid 1970s, with the advent of low-cost, high-performance minicomputers, government agencies rushed to adopt computerized systems, and the Economic Planning Board was tasked with the management of budget allocations for each government agency to install such systems. These budget allocations soon became a burdensome task for the Economic Planning Board each season. In order to ease some of this burden, the Economic Planning Board proposed that the National Computer Center, which originally belonged to the Ministry of Science and Technology, be transferred and reorganized as the Government Computer Center under the Ministry of Government Administration.

Although this proposed transfer was put into action, the system capacities of the Government Computer Center fell far short of being able to handle all necessary administrative information and as a result, government agencies spurned the Government Computer Center and introduced their own separate systems. The second plan set forth by the Economic Planning Board for cost reduction called for the construction of a new computer network to enable efficient government administration and promote the development of an integrated computerized network that could commonly be used by multiple government ministries. This second plan was the Master Plan for Computerization of Administrative Affairs, officially announced by the Ministry of Government Administration.

Interestingly enough, the first plan proposed by the Economic Planning Board was aimed at cutting the budget for computer systems in government ministries, while the second plan was aimed at long-term budget reductions achieved through the development of an integrated computerization system, facilitating spending for computerization so it would ultimately lead to savings in managerial and administrative costs.

at computerizing 99 types of public tasks performed by 32 government organizations and included sub-plans to specify the details on how to share computers and how to build networks to interconnect individual organizations for performing tasks. In addition, the plan sought to establish a computer center in each province and city government office along with the interconnection of 33 cities through a communication network to promote the computerization of local administration. Given the nation's economic difficulties at that time, investing government's financial resources in the computerization of administrative work was a radically innovative idea. In hindsight, this investment was the cornerstone for the computerization of government tasks, eventually laying the foundation for Korea to become one of top e-Government leaders.

For the implementation of the First Five-Year Master Plan, the Economic Planning Board launched a pilot project. Since the government lacked experience in building computerized networks for public tasks, the pilot project was an indispensable part to increase the chances of success while preventing waste of money. North Chungcheong Province, whose government was keenly interested in computerizing its local administration, was chosen as the target province for the pilot project. The pilot project was undertaken from 1978 to early 1980, but dramatic changes in the domestic political environment in the 1980s and the turmoil that ensued significantly cooled the government's passion for the project. At that time, various pilot projects that had been in

progress, including the one for the computerization of North Chungcheong Province under the First Five-Year Master Plan, were suspended. This, in turn, practically put an end to the First Five-Year Master Plan for the Computerization of Administration. However, the technological and administrative experiences gained through the pilot projects greatly contributed to the effective planning and implementation of the National Basic Information System (NBIS) years later.

In December 1982, in the midst of a period of political chaos, the government announced the Second Five-Year Master Plan for the Computerization of Administration (1983-1987). Whereas the First Five-Year Master Plan aimed at automating the unit tasks of each organization with computer-based data processing, the Second Five-Year Master Plan had the more advanced goal of connecting each task and process over a computer network. In January 1983, starting with the computerized issuance of passports by the Ministry of Foreign Affairs, the second plan spearheaded a pilot project to computerize the resident registration processes of eight administrative districts throughout the country. The plan, started in March 1986, also experienced a series of challenges and setbacks due to the country's unstable political landscape.

2. Computerization of Libraries for the Sharing of Knowledge and Information

In the late 1970s, along with the government's efforts to promote the computerization of administrative tasks to improve the efficiency of public organizations, policy efforts to computerize libraries for sharing public knowledge and information were also made.

Computerization of the National Assembly Library

In 1978, the National Assembly Library drafted a comprehensive plan for the computerization of library tasks. Based on the plan, the library produced the first indices in Korean for periodical articles in Korean and created a database of domestic doctoral and master's degree dissertations. In 1985, the National Assembly Library, in its efforts to automate library tasks and information, established the Integrated National Assembly Information System.

Following these accomplishments, the National Assembly Library continued to promote various computerization projects such as electronic library and Internet information databases in order to help users retrieve information from the library website without having to visit it. In addition, the library also created and continues to operate various systems, including the Integrated Library Management System for the efficient management of library collections, the National Digital Library,

and the National Assembly Law Library for the support of the legislative activities of legislators and for the provision of information services to the general public.

In addition, the library opened its Mobile Digital Library in 2011, which provides guidance to the library and electronic searches of library information. It has also built the National Assembly Law Information System, which collects and provides a vast amount of both domestic and overseas information regarding the country's legislature, providing quality information service on laws around the world.

Computerization of Public and University Libraries

At the same time that the National Assembly Library was fully embracing computerization, public and university libraries nationwide were also establishing computerized systems to organize their collections. As part of these efforts, the National Library of Korea developed the Korean Machine Readable Cataloging (KORMARC) to designate it as the standard format to process single volumes. As the need for automation of existing manual work increased, university libraries also automated tasks such as material list searching, sourcing, and lending. However, many of these systems experienced problems such as duplicate data entry and inconvenient error corrections.

Since the 1990s, automated library systems in Korea have evolved into more advanced

integrated information systems with the adoption of database technology. Since the late 1990s, the need for linking information between libraries and the widespread use of the Internet ensued the emergence of digital libraries. Beginning in the 2010s, libraries started developing more advanced digital-based services over the preexisting automated digital library concept. They attached Radio-Frequency IDentification (RFID) tags to the books to provide unmanned loan and return services, and smart phone-based book searches and loan services are also being made readily available.

Computerization of judicial precedents

The courts also proceeded with the computerization of judicial precedents since the late 1970s. The Supreme Court used to post case reports in its official gazettes since 1948, when the government of Republic of Korea was founded, but the printed gazettes were difficult to locate and retrieve because they were in hardcopy form. In response, computerizing court tasks started and the civil case computerization system was completed in 1986, followed after by the computerization of the judicial affairs system in 2002. In August 2006, the Supreme Court also launched the Court Decision Issuance System, which features functions for the prevention of forgery and alterations and for verifying the authenticity of judgments. In 2007, the Supreme Court also completed the customized trial support system JUSTICE, which assists judges in handling their trial-related tasks. JUSTICE has proven to be a comprehensive and efficient tool for

judiciaries, allowing for convenient trial schedule management, case proceeding management, and written electronic court decisions. In April 2010, the judicature opened its electronic patent lawsuit management system, followed soon after by its electronic civil lawsuit filing system in May 2011. In January 2013, the electronic family litigation system and administrative litigation system were opened, followed that same year by the electronic provisional seizure and injunction filing system in September 2013. In 2015, the electronic system was expanded to all litigation cases.

Section 4.

Building Nationwide Information Systems

1. National Basic Information System (NBIS) Project and “Investment First, Settlement Later” Financing Scheme

Up until the early 1980s, the computers employed by the government and public institutions were used almost exclusively for simple calculation and office automation, and a portion of the investments in relevant computer systems were redundant due to a lack of interconnection between Individual systems.

In addition, each institution adopted different models of computers, each of which had different application software. Moreover, for example, code values for 'Seoul' were used differently from system to system, so even if the systems had been linked, each code would have needed to be converted for use.

To solve these problems, the government, under the strong leadership of the President, initiated

plans for the National Basic Information System Project. The project aimed at replacing the manual operations of each government department by an automated system, as well as integrating all the departmental automation systems into one platform to raise the overall efficiency of administration computerization. The National Basic Information System Project was divided into five major sub-systems along with institutional lines : National Administrative Information

The National Basic Information System, Once Considered a “Mission Impossible” *- Made possible through “Investment First, Settlement Later”-*

The total cost of the National Basic Information System (NBIS) project was KRW 760 billion, a staggering amount of money then, even for the government. Unable to provide the funds through the existing means, the government took an innovative leap and incorporated a subsidiary of the Korea Telecom Corporation to cover the costs of the NBIS's implementation.

The reason that the Korea Telecom Corporation was not able to make a direct investment in the Data Communication Corporation of Korea, provider of the NBIS project, was that the investment was a financial business, in which the invested funds would be returned later, and the articles of association of the state-owned Korea Telecom Corporation prohibited any financial business. After a new funding method was secured, the Data Communication Corporation of Korea began spearheading the NBIS project as the project provider.

Against such backdrop, the Korea Communication Promotion Corporation was established in November 1986 with 100% of its shares owned by the Korea Telecom Corporation. Soon after its establishment, the Korea Communication Promotion Corporation announced its plans to provide a total of KRW 151.3 billion – the equivalent of KRW 7.6 billion in 1986, KRW 68.3 billion in 1987, and KRW 75.4 billion in 1988 – to the Data Communication Corporation of Korea. Establishment of the subsidiary and subsequent investment is what truly propelled the National Basic Information System project forward. In January 1987, the National Computer Agency was established for the auditing and review of the project. All of these important steps laid the groundwork for the eventual completion of the NBIS, a national mega project.

The funding and operation methods of the National Basic Information System now serve as major examples for other countries promoting national informatization projects.

System, Financial Information System, Education and Research Information System, Defense Information System, and National Security Information System.

In 1984, the National Basic Information System Steering Committee, led by the Office of the President, was organized to determine the direction of the project and details of the plan. In December 1984, the National Basic Information System Steering Committee announced its finalized Master Plan, including the realignment of institutional arrangement for the promotion of the information industry, establishment of the National Basic Information System, administrative computerization, nurturing of skilled computer experts, and development of the hardware and software industries. In 1986, the blueprint of the project took shape in the form of the Act on Expansion of Dissemination and Promotion of Utilization of Information System (NBIS Act). In 1987, after all the legislative groundwork, financial resources, and promotional framework for the project had been completed, the government made strong headway on the project by establishing sub-plans for each of the five sub-systems. The National Basic Information System was a comprehensive informatization project in which the government laid legislative groundwork for the government-wide promotion of computerization throughout all government institutions. It went beyond the individual adoption of computers for separate department tasks, and planned to efficiently and systematically promote computerization under strong coordination and control mechanism. Such

efforts by the government laid the very foundation for the leading e-Government today.

The National Basic Information System Project was promoted in two stages : from 1987 to 1991 and from 1992 to 1996. The first and second stages encompassed large-scale national projects involving 283 host computers, 27,924 work stations, and 2,830 trained professionals. Initially, the total estimated cost of the project was a staggering KRW 760 billion. With the establishment of such large-scale national project, an incredibly huge influence on related industries as well as improvement in public services and overall efficiency of government tasks could be expected. However, a total of KRW 760 billion was a tremendously large sum of money, especially given the size of the government's budget at the time. The unaffordable amount of investment was preventing the project from moving forward. To solve these financial problems, the "Investment First, Settlement Later" financing method was proposed. Under this proposed method, a subsidiary of the Korea Telecom Corporation would first provide a huge sum of money as an investment in the project and then later receive investment returns through an audit review process (a process through which projects are checked and monitored to see if they are staying on track). The Korea Communication Promotion Corporation was incorporated for the investment part of this method, while the National Computer Agency was established by the National Basic Information System Act for the audit review. The establishment of National Computer Agency and the subsidiary of the Korea Telecom Corporation is what truly spurred the

implementation of the National Basic Information System Project, along with the passing of the NBIS Act, which established the framework for the promotion of the project. NBIS Act's key contents are as follows: first, the National Basic Information System Steering Committee led by the Office of the President shall be established to coordinate liaison between the ministries; second, the master plan and the action plan for the dissemination and promotion of the National Basic Information System shall be established; third, the network operator and the telecommunication service provider shall be allowed to participate in the project to provide administrative and technical support; fourth, technical cooperation and information for the development of the NBIS project-related technologies and devices shall be provided; fifth, technical standards shall be established to ensure interoperability and compatibility between computer devices. In addition, it stipulated matters referring to the promotion of the pilot project and the protection of private information.

2. First Stage of the NBIS Project

The first stage of the National Basic Information System Project was carried out from 1987 to 1991 in accordance with the sub-plans drawn up for the five major fields of administration including finance, education and research, national defense, and national security. Out of respect for matters of confidentiality and national security, details regarding the national

defense network and national security network have been withheld from the descriptions of each network below.

The Financial Information System focused on establishing a network between banks to enhance the public's convenience when conducting financial transactions and to facilitate the opening of financial markets. Through this project, the main computer of each bank was connected to a single network, thereby enabling online banking services. After the initial network was established, network upgrade and interconnection were gradually expanded to include the secondary financial sector such as securities, insurance, and investment finance. The establishment of this expanded financial network played a crucial role in implementing the real-name financial transaction system in 1993.

The Education and Research Information System aimed at creating a highly developed computing environment at each school level. The project provided support for computer education, the computerization of universities and libraries, the establishment of academic information databases, and the building of an educational administration network. The research network intended to support R&D activities at universities, research institutes, and public institutions. These projects sought to advance science and technology by providing supercomputing and networking resources as well as data services and network application services to all researchers at home and abroad.

The National Administration Information System Project put the utmost priority on the

computerization of the six core tasks (resident registration, real estate registration, motor vehicle registration, customs clearance, employment, and economic statistics) directly related to public affairs in order to provide people with quick and accurate public services, while realizing a small, but efficient government. The computerization of each of these six core tasks was pursued as follows.

1) Computerization of resident registration

The government built a database with the basic personal information of all of its citizens through the computerization of resident registration.

The computerized resident registration system interconnected all 3,700 towns and villages (eup, myeon, and dong) nationwide over a computer network. Since resident registration information is a primary data field to be shared among government agencies for e-Government services, this network system became a critical infrastructure for the development of Korea's e-Government.

2) Computerization of real estate-related tasks

The government built a database of 32 million parcels of land and forests nationwide, linking 273 government agencies in cities, counties, and boroughs across the country through the use of a computer network. Through this network, the government not only protects public property rights, but also accesses accurate land and forestry ownership information, while establishing various real-estate related policies, including property tax laws.

3) Computerization of motor vehicle registration tasks

The government built a database of the nation's motor vehicle information and shared this information through a network that could be accessed by relevant institutions. Through this network, the government is able to manage information related to motor vehicles, such as new vehicle registration, changes, transfer and termination of registration, vehicle collateral, and seizures.

4) Computerization of customs clearance tasks

The government computerized customs and tariff-related tasks, such as those related to import and export clearance, bonded cargo management and interconnected customs, bonded areas, transportation companies, and banks. Through this network, handling of customs clearance and tariffs-related tasks such as import and export declarations, inspections, and bonded cargo management became faster and easier, offering more convenient services.

5) Computerization of employment management

The government connected employment information collected and processed by relevant government institutions nationwide and thereby enabling them to share job seeking and job opportunity information with one another. This system contributed to reduce unemployment and facilitate employment.

6) Computerization of economic statistics tasks

The government also built a database to integrate the statistics that had formerly been reported to the Statistics Korea previously, and constructed a system through which related institutions could share statistical information. Through this network, the government was able to use various economic statistics to establish national economic policies.

The government made various efforts to ensure the overall success of the National Basic Information System project in addition to promoting projects in each sub-system. Some of these efforts included the localization and development of host computers, which helped further the development of domestic computer technology and foster the country's information technology industry. In addition, the government also set standards for computer equipments, communication technology, and common administrative codes to ensure interconnection and compatibility between the individual systems used by each governmental department. Furthermore, the government successfully promoted the project and improved network quality by introducing the network audit review system for the implementation of "Investment First, Settlement Later" financing scheme. Audit reviews by professional third parties found and made corrections on technical and management problems of the National Basic Information System.

3. Second Stage of the NBIS Project

The Second Stage of the National Basic Information System Project, undertaken from 1992 to 1996, sought to realize, by the 2000s, an information society to the extent of advanced countries. On a smaller scale, the second stage also aimed to realize a small but efficient government, achieving high business productivity, and create a more convenient life for the general public. More specifically, the second stage focused on facilitating the shared use of the information systems built by each ministry and successfully completing the National Basic Information System Project by enabling a reciprocal operation of the sub-systems built during the first stage.

The Financial Information System focused on improving existing services by adding new services to enhance customer convenience. In addition, the government sought to secure the global competitiveness of its financial institutions in preparation for the autonomous operation and globalization of the financial sector. Significant changes were brought to the financial sector in the second stage. Introduction of sophisticated payment systems such as automatic teller machines, home banking, and debit card systems—have greatly improved the convenience of the public in their use of financial services.

The education network project was more actively promoted in the second stage than in the first stage. The second stage concentrated on supporting computer education at schools, the

computerization of university administrations and libraries, the establishment of academic information databases, and the construction of educational administration networks. In particular, in the second stage, the government built and operated the Comprehensive Educational Information Service System, for the development and dissemination of educational contents, along with the establishment of a physical network for the service system.

The second stage of the research network project focused on upgrading the main networks built in the first stage and conducted joint research projects with academic research networks abroad including Japan and the US. Additionally, a supercomputer was introduced into the network connection, and its utilization rate by relevant research institutes reached approximately 80%.

The National Administration Information System in the second stage complemented the computerization of the six sub-systems built in the first stage and encouraged the shared use of the information system by relevant departments. During this stage, the government also focused on another seven key tasks for enhancing the public's convenience in interacting with the government for services and improving industrial competitiveness, public welfare, and the management of industrial intellectual property rights. The seven tasks of the administration network project in the second stage are as follows.

1) Establishment of postal network

In October 1996, the government installed computer equipment such as terminals, modems, and printers in 3,455 post offices nationwide and established a distributed postal network centered on 240 supervisory post offices.

2) Public welfare administration

The government pushed forward with the computerization of healthcare and welfare administrations in order to provide swift and balanced welfare services across all regions and social classes. Computer networks were established in the local healthcare and national mental hospitals, and electronic document exchange standards were established in the health and welfare network.

3) Electronic Data Interchange (EDI) based customs clearance

As one of the seven key tasks, the government targeted improving customs clearance and customs administration. To achieve these goals, the government connected 41 customs offices, 417 customs broker offices, 1,782 trade companies, and 45 banks over a computer network.

4) Industrial intellectual property rights information management

The government built a database of domestic and foreign patents and utility models—890,000 from Korea and 15 million from foreign countries—and developed a search platform with a patent tribunals retrieval function.

5) Computerization of meteorological tasks

The government built database of weather and climate information, including daily chances

of precipitation, rainy season analyses, weather chart analyses, and surface weather statistics.

The network of Korean Meteorological

Shared Use of Resident Registration Information and Development of e-Government

In order for information to be shared by various administrative agencies, the provider must have the ability and strong intention to provide information, and the user must have the skills to use it. Even if the provider has the technical capabilities needed to provide information, sharing of information is nearly impossible if there is no real intent to actually do so.

The concept of information sharing has had great significance in the history of the e-Government development in Korea. In fact, there was much debate about shared use of resident registration information in the process of building a computer network for passport issuance. At the time, the Ministry of Home Affairs, which was in charge of managing resident registration information, was strongly opposed to information sharing. In addition, the law allowed the resident registration information to be used only for the purpose of resident registration system management. At the same time, there were also many differing opinions regarding the protection of personal information. These issues were exacerbated by the fact that information collected by individual government ministries then was not considered a public asset, but rather viewed as the property of each relevant ministry.

In particular, in 1996, when the government proposed introducing a system for the distri-

bution of electronic IC resident cards using integrated resident information, issues were raised concerning leakage of the information and illicit use of the cards. In the end, strong opposition from civil groups and the election of a president who opposed the idea resulted in the suspension of the project in 1998. Around this same time, opposition against shared use of resident registration information grew even stronger within the government itself.

However, in the early 2000s, the government drew 11 Priority Initiatives for construction and implementation of e-Government, which called for sharing of the resident registration information for effective e-Government services. The project for building the Government for Citizen (G4C) portal and other key projects also increasingly demanded information sharing. The operation of the G4C portal, in particular, required use of data collected by other ministries, such as the real estate and motor vehicle registration information. In order to effectively manage the portal, the Ministry of Government Administration and Home Affairs had to provide the resident registration information to other ministries and departments. As the information sharing was authorized, government ministries began providing information for common use for the implementation of e-Government. This allowed Korea's e-Government to take a great step forward.

Administration was also linked with the disaster prevention organizations, making them access weather and climate information online.

6) Inventory management

Improving inventory management was among the key tasks initially selected as a top priority for improving general management efficiency. However, this task could not be promoted during the second stage of the National Basic Information System Project due to financial constraints. The project was implemented separately afterwards.

7) Fishing vessel management

The government developed an online system for fishery management tasks, including licensing, inspections and related statistical tasks, interconnecting more than 170 relevant organizations contributed to enhance the competitiveness of the fisheries industry and relevant public services.

government departments were able to readily access and share online databases containing resident registration, real estate, and motor vehicle information. This real-time sharing and exchange of information allowed these departments to greatly enhance their service by linking business processes. Among the databases connected online, resident registration information, which is frequently used for various administrative tasks such as employment, welfare, education, taxation, and military affairs, was particularly in high demand by government departments. The National Administration Total Information System is considered as the early version of today's Public Information Sharing System, which is the core infrastructure of Korea's highly efficient e-Government, serving as the cornerstone for its development.

While carrying out the Second Stage of the National Basic Information System Project, the government recognized the importance of joint use of administrative information. The government had initially planned to build a Statistics Process System to provide policy information to each department based on the database built in the First Stage of the project. In the beginning of the second stage, however, the government put more emphasis on building a system for the joint use of administrative information, leading to the establishment of the National Administration Total Information System. With this system, all relevant

Section 5.

Launching Nationwide Networking for Informatization

1. Government Network for Data Communication of Central Government

In June 1970, the first ever data communication was established over a telephone line and a modem between the computer terminal of the Economic Planning Board and the large-scale Korea Institute of Science and Technology host computer. After this groundbreaking event in Korea's communication history, relevant research and development efforts were consistently promoted. In 1982, data was exchanged between computers based on TCP/IP protocol for the first time in Korea, which was one of the pioneering occurrences worldwide. From that time up until 1987, R&D efforts focused mainly on testing networks, whereas from 1987 onward (when the National Administration Total Information System Project was being fully implemented), projects for the construction of data communication networks began in earnest. In 1989, Korea Telecom successfully connected with the international Internet network using a leased line, ushering in the era of data communication in Korea. In 1994, with the establishment of Korea Telecom's data network (KORNET), the era of the Internet began

in full swing, making it easy for everyone to access and use the Internet.

During the first and second stages of the National Basic Information System Project (1987-1996), the government built a data communication network, which was an essential infrastructure for informatization. In 1996, a high-speed network connecting the central government ministries was established. The government's high-speed

The First Internet Connection

The first-ever Internet connection in Korea was achieved in May 1982 using the official addresses of two medium-sized computers – one installed at the Korea Institute of Electronic Technology and the other in a research lab at Seoul National University. The TCP/IP-type connection used was the first of its kind in Asia and the second of its kind in the world following the US. The connection's transmission speed of 1.2 kbps represented a high velocity enabling the transmission of 150 characters per second, which, at the time, was a speed incredibly fast. Since then, the commercial Internet speeds have increased a million-fold to several Gbps. In 1983, Korea connected to the US via the Internet for the very first time, and in 1984, Korea successfully connected to Europe using the X.25 method. Despite these earlier achievements, full-scale overseas Internet connections are considered to have started in 1990, when the connection to the international network was made using the dedicated line, HANA-Net.

broadband network promoted information sharing and exchange by linking all the central administrative agencies, local governments, legislative branches, and judicial branches around the Integrated Government Building. In 1997, a high-speed dedicated connection (T3: 45Mbps) was established between the First and Second Government Complex Buildings. Next year, a dedicated line was extended to the Third Government Building in Daejeon and also to the legislative and judicial branches.

2. MOHA-NET for Local Governments

With the completion of the National Basic Information System, local governments began to use computers in earnest, and the construction of information communication networks connecting these computers became imperative. In 1994, in response to this pressing need, the Ministry of Home Affairs established MOHA-NET, an information network interconnecting the Ministry, metropolitan cities, and basic local governments to promote the informatization of local governments. The connection bandwidth between the Ministry of Home Affairs and the city and province offices was 56Kbps; the connection between the city and province governments and county and borough governments was 9.6Kbps; and the connection between the Ministry and other organizations was 56Kbps. After the establishment of the Local Administration Integrated Information Network (MOHA-NET), the use of the high-speed broadband network increased, and shortly

the bandwidth between the Ministry and city and province governments was further increased to the E1 level. Also, the connection speed between provinces and cities and counties and boroughs was increased to 64Kbps.

3. Korea Information Infrastructure (Information Super Highway)

Building public information and communication network

In 1984, Korea became the second country in Asia, following Japan, to establish a packet-switching public communication network dedicated to data communication. Despite this groundbreaking step, Korea's public communication network was expensive and had very limited coverage. In the late 1990s, with the emergence of high-speed Internet services using ADSL and cable modems, low-cost Internet connections with high-speed became available. In 2002, with the frenzied expansion of high-speed Internet networks, the number of broadband Internet subscribers surpassed 10 million, gaining international reputation as a global powerhouse of ICT.

Building an Information Super Highway

In 1993, the new government sought to build an information super highway capable of transmitting multimedia information such as voice, data, and video. In 1994, the Ministry of Information and Communication was launched as the competent authority for the promotion of informatization. One year later, the new Ministry mapped out a comprehensive plan for constructing the infrastructure needed to build an information society. The plan aimed at building a nationwide information communication infrastructure to enable the universal use of broadband ICT services such as remote education, telemedicine, and telecommuting.

The Ministry of Information and Communication and the National Computerization Agency developed a plan, dubbed the Project for Building Korea Information Infrastructure (KII), to connect all government agencies, local governments, and public institutions with fiber optic cables. The project, which was estimated to cost a total of KRW 811.4 billion, was a three-staged project from 1995 to 2010. The KII-Government has now become a key infrastructure for most of Korea's government organizations and public institutions.

The first stage (1995-1997) of the KII-Government rolled out fiber optic backbone network for the information superhighway, resulting in the deployment of a high-speed network in 80 locations nationwide with a total investment of KRW 175.5 billion. The first stage of the project, once completed, provided broadband services to

15,000 public institutions, including government ministries, local governments, and educational institutions, at a 40-50% cheaper rate than those of private providers. The second stage (1998-2002) of the project focused on expanding coverage and enhancing network service by making a transition from ATM-based backbone network to router-based one as the core network. In the third stage (2003-2005), a converged broadband multimedia service transmission network was completed, providing transmission speed of tens of Gbps to several Tbps, five years ahead of schedule planned.

From 1996 to 2005, the KII Project expanded the network subscribers 19 times and remarkably increased network speed. This served as the basic infrastructure for Korea's current e-Government.

Section 6.

Computerization of Key Government Businesses and Services

1. Service Provision through Computerization in the First and Second Stages of the NBIS Project

Through the administration information systems established in the first and second stages of the National Basic Information System Project, the government launched electronic systems services, enabling government ministries to share their administrative information and provide public services. The government actively used the sub-systems of National Basic Information System for handling resident, real estate, and motor vehicle registration information, customs clearances, and employment, while providing user-friendly and faster services. The major administration computerization systems constructed through the project are as follows.

Computerization of resident registration

The computerization of resident registration began in the late 1977 with the pilot project for administrative computerization in North Chungcheong Province. As part of the pilot project, each city and county government accessed

the server installed in the North Chungcheong Province government office and entered resident data. From a technical perspective, the project was a success; however, the full-fledged implementation of the system was suspended due to legal restrictions specified in the Resident Registration Act.

In 1985, the government launched another pilot project for resident registration system, targeting Nonhyun-dong, Seoul. After the successful completion of the test operation in Nonhyun-dong, the computerization of resident registration was systematically expanded to about 3,300 town offices nationwide from 1987 to 1988. As one of the key tasks of National Administration Information System under the National Basic Information System Project; a total of 78 types of basic personal information such as name, date of birth, and address was entered into the resident database by town offices nationwide. This information was then stored in the servers installed in each province and city government office, making the data retrievable by the Ministry of Internal Affairs. The government was then able to use this information as a basis for establishing statistics and relevant policies.

By 1989, resident registration data entry throughout the country had been completed, and in December 1990, the national online registration service was officially launched. In 1991, the Resident Registration Act was amended to provide legal grounds for the computerization of resident data. As a result, administrative tasks such as change of address and issuance

of certified copies of resident registration could be processed electronically. When resident registration information was renewed nationwide in 2000, relevant data including photo data, was computerized. In 2003, the Ministry of Government Administration and Home Affairs improved upon the preexisting system by building a new Web-based resident registration system for cities, counties, and boroughs, enabling all the government administration offices in the country to browse resident registration data online. These improvements have completely eliminated the need to store and manage paper registers manually.

In March 2006, the government established a verification system to check the authenticity of the resident identification card information. Several years later, in July 2013, a signature verification system and an electronic signature verification system were made available to replace individual seal certification services. The government's identification card verification services are designed to prevent the illegal use of resident cards and driver's licenses by persons other than the cardholder along with prevention of the opening of fake bank accounts and cloned phones. In December 2015, the government encrypted resident registration numbers to ensure a secure management system with tight protection of personal information.

The resident registration system provides 33 government administrative agencies, including the National Tax Service, National Police Agency, and National Health Insurance, with resident

registration data for the purpose of eliminating the need for procuring the paper certificate of resident registration by sharing its information among the government agencies authorized to share the data.

Computerization of real estate-related tasks

Cadastral businesses greatly influences over the use and ownership of land and forms the very foundation of real estate management. In 1987, the government began to computerize 46 tasks related to land information including those related to the location, ownership, and use of land. These tasks affected all 32 million land parcels and forests nationwide. With the establishment of the land information system, delivery of public services related to real estate was made faster and easier than before. The government also developed a system connecting the land information system to taxation data for backing the implementation of comprehensive land taxes. In April 1990, the public services delivered over land information system were officially launched, and in the following year, service provision anywhere irrespective of land location was launched, making the issuance of copies of land registers available at any location across the country.

In 1992, the appraised land values of 25 million individual land lots nationwide were converted into digital format and made available online for retrieval. Through the land information system, land use, land price levels for each region, and land use statuses were made readily available for online access for providing relevant information

when making real estate related policies.

Along with this, in 1993, the Ministry of Construction completed its computerization of house price information. The Supreme Court also completed the computerization of real estate registration and launched an Internet registration reading perusal system (Internet Registry Office, www.iros.go.kr).

Despite the fact that land, building, and real estate registration information are closely related, each information was discretely managed by a separate system under a separate legal framework. Due to the added complexity of separate systems and the lack of immediate and connected

updates, information inconsistencies were often found between the systems. As a result of these complexities and inconsistencies, the general public also experienced great inconveniences since they were required to get quite a number of certificates issued when applying for licenses or permissions in regards to real estate or mortgage loans. In 2009, in order to address these problems, the government prepared a comprehensive plan to unify administrative real estate information. Several years later in 2013, the government developed a comprehensive real estate public register system and renewed the On-nara Real Estate Information Portal launched in 2007 to provide full-scale services for the management, operation, access, and issuance of comprehensive real estate public registry information. By 2016, 18 types of public real estate registry information had been integrated, resulting in comprehensive listings of ownership information and real estate certificates.

Comprehensive Real Estate Register System

The comprehensive real estate register system records and stores comprehensive information related to real estate issues such as land designation and ownership, building designation and ownership, land use and regulations, and real estate prices.

- Land register: includes information on the addresses, land area, location, and shape of each lot of land for the purpose of managing lot information status and changes
- Building register: includes information related to buildings such as building location, land information, area, number of floors, structure, and use
- Certified copy of register: includes key information on land and buildings, such as proprietary rights

Computerization of motor vehicle registration tasks

In 1990, in order to enhance the efficiency and convenience of motor vehicle registration, the Ministry of Construction began to build a computerized motor vehicle registration system. Under the computerized motor vehicle registration project, all motor vehicle registration information was digitized and connected online to 168 relevant government agencies, including the Motor Vehicle Registration Office. By March 1990, the system was in full operation for issuing motor vehicle registration certificates and related public services.

Since the 1990s, the number of motor vehicles has dramatically increased. From 2008 to 2011, the government invested a total of about KRW 31.3 billion in the expansion and reorganization of the Motor Vehicle Management Information System. This system enabled the government to integrate and manage all the information in accordance with the stages of life cycle of motor vehicles—from production to registration, and eventually to scrapping. In July 2010, the Public Portal Service for Motor Vehicle Management and the Motor Vehicle Management Information System launched online service, allowing the public to quickly and easily address vehicle-related issues online.

Computerization of customs clearance tasks

After the liberalization of imports in the 1990s, Korea's import and export volumes sharply increased, demanding a computerized customs clearance system. In the 1990s, in response, a project was initiated to computerize import and export customs clearance and bonded cargo management. In April 1990, in the first stage of the project, 109 government and private institutions including customs, customs brokers, and banks were connected online. This laid a foundation for improving export and import declarations and inspections and bonded cargo management.

In June 1992, by establishing the 6-year Master Plan for the Automation of Customs Clearance, the government decided to introduce the Electronic Data Interchange (EDI) technology.

The Korea Customs tries to realize a paperless export customs clearance system by completing the EDI customs clearance system in October 1994. However, since the import/export approval and requirement verification agencies equipped with the automated system were few in number and concentrated in large cities, trading companies located in other cities were not able to take full advantage of the new system. To resolve this problem, the government expanded the EDI automatic customs clearance system to complete a full-scale implementation of the system. Since

EDI Customs Clearance System

The EDI Customs Clearance System sends and receives transaction information through the use of a computer without the need for paper documents. This is done through the use of standardized electronic document forms and communication methods for the processing of customs clearances in international trading. Through the system, it is possible for import or export companies, customs agencies, and tax receiving banks to connect their computers and declare transactions on the EDI system without submitting paper documents, and receive a report of the result at their offices. The main trading partners of Korea then were the US, Canada, Australia, and European countries and they requested their import and export declarations be processed through the EDI system. Given the international trend of expanded free trade at the time, the establishment of the EDI system was an essential part of Korea's development.

1998, thanks to this expansion, trading companies have been able to access the automated trading system from their PCs to request and check the results of their import/export approval status.

However, in the recovery from the financial crisis in 1997, drastic deregulation increased problems such as illegal foreign exchange transactions, fraudulent customs clearance, and fraudulent reporting. At the same time, concerns were raised about the inefficiencies of administrative processes pertaining to international trading. In 2003, to address these issues, the government initiated a plan to establish an electronic logistics and trade service system capable of handling the entire customs process—from marketing and foreign exchange to settlement, customs clearance and logistics—in a single window over the Internet. By 2006, the government completed an electronic customs clearance system, dubbed UNI-PASS, consisting of an Internet-based public service system, export declaration system, customs portal system, import clearance system, customs drawback system, and bonded cargo transportation system. One year after, the government opened a new e-trade platform called the U-Trade Hub, offering functionalities for checking the progress of imports and exports, financial flow forecasts, comprehensive marketing information searches, and electronic bills of landing. By 2011, the government also established a global logistics and trade information network.

From 2013 to 2015, the Korea Customs Service invested KRW 178.3 billion in the construction of the National Customs Information Network

offering customized services, a smart global customs clearance system, and efficient economic border management based on real-time information, and seamless service provision. Upon its completion, the National Customs Information Network contributed greatly to reduce the amount of time required for import and export declarations and quarantine inspection. As of October 2016, the new system had saved the government roughly KRW 700 billion by reducing labor costs and the amount of time required for import/export clearance. With speedier import/export clearance process, involved parties such as trading companies, customs brokers, and bonded transportation carriers gained roughly KRW 2 trillion in additional profits as of October 2016. In addition, from being freed out of liability for constructing additional harbors and/or expanding the existing ones, the government also saved an estimate of KRW 300 billion. Supposing that the saving from the use of the new system are invested in production activities, it is expected to bring about a production inducement effect of KRW 8,000. In total, a sum of savings from the use of the system is estimated to reach KRW 3.8 trillion.

In recognition of these achievements, the National Customs Information Network was selected as the best practice by the UN Anti-Corruption Forum in 2001. It was also selected as the best service among 169 member countries of the World Customs Organization (WCO) in 2006 and received the Intellectual Property Award. In 2007, the network was awarded the "e-Asia Award". In addition, it has been exported to many countries

including Mongolia, being cited as a model for customs systems.

Computerization of employment management

In 1990, the Ministry of Labor computerized employment management tasks such as job placement, workplace management, and vocational guidance by connecting 49 local offices of the Ministry online. Initially, however, the system was restricted to internal government use only, but after the full implementation of the Employment Insurance System in 1995, the employment management system evolved into today's Work-Net open to the public. With a total of KRW 10 billion investment over two years, Work-Net built a database of information collected from 38,000 workplaces with 30 or more regular workers, amounting to 4.1 million employees insured by the Employment Insurance. The system computerized Employment Insurance-related tasks such as employment status, insurance premiums, insurance fund management, and unemployment benefits. The system has also interconnected the nationwide offices of the Ministry of Labor, local governments, employment information centers, schools, and various vocational training institutions, providing employment opportunities at a national level to promote stable employment.

The massive lay-offs caused by the 1998 financial crisis have led to a sharp increase in the demand for employment opportunity information across the country. As part of its measures to reduce the nation's high unemployment, the

government expanded and reorganized the employment information network to provide public employment information services through Work-Net (www.work.go.kr) since 1998. Work-Net provides services such as job placement, career counseling, and recruitment support and also offers online-based personalized services and online appointment for vocational guidance program in offline employment support centers.

In 2007, the government added more user-oriented services to Work-Net, including job placement for the socially disadvantaged, the disabled, and the elderly. As a result, Work-Net has become the country's representative portal for recruitment and job search services. In 2010, Work-Net began the automatic collection of job information available throughout the Internet to support college graduate job seekers and made services available on smartphones. By the end of 2015, the number of Work-Net mobile app downloads had surpassed 2.91 million. In 2015, Work-Net began collecting and disseminating information not only about jobs in the private sector but also from public employment information sites, such as Go-jobs (www.gojobs.go.kr) and Job-Allio (job.allio.go.kr). Currently, Work-Net is in the process of evolving into a customized integrated network closely linking employment and welfare services.

In 1998, when Work-Net officially opened, 156,000 users found employment through the site. As of 2015, 1.91 million job seekers have successfully found employment through the site, and the number of daily visits has surpassed 1 million.

Computerization of passport issuance

Following the formulation of a plan for computerization of passport issuance in 1981, the Ministry of Foreign Affairs started implementing the plan two years later. In 1985, the computerization of passport issuance was applied only to tasks such as passport issuance status verification, and identity verification application/confirmation. Also, passport issuance operations were entrusted to major cities in each province. At the time, the passport issuance itself was not computerized. Thus, passport operation was processed manually in a distributed fashion by province, and was handled manually by each local authority.

Since the second stage of the National Administration Information System focused on the joint use of existing administrative databases among various administrative bodies, the Ministry of Foreign Affairs established a plan for the construction of information system for passport issuance tasks as part of the National Administration Information System Project in 1994. The Ministry completed the system in 1995. The system enabled a variety of processes and related tasks, including passport issuance applications, identity verification inquiries, and the input of inquiry results, to be processed all at once. As a result, the number of documents required for passport applications were greatly reduced, and applicants' identity verification inquiries were made available all online. This allowed the overall passport issuance process to be streamlined, enhancing the citizens' convenience greatly.

In 2008, the Passport Information Comprehensive Administration System (PICAS) was established to provide an integrated management of passport issuance. The PICAS interconnects issuing and passport offices to local governments, overseas missions, and related organizations. The system is continually being upgraded and keeps offering convenient passport issuance services. To date, about 3.38 million people per year apply and receive passports through this system.

Computerization of meteorological tasks

The computerization of meteorological tasks was in full swing with the establishment of a dedicated department within the Meteorological Research Institute in 1978.

At long last in May 1985, the Central Meteorological Administration introduced computers for the computerization and automation of related tasks such as data communication between domestic and overseas institutions and drawing weather maps. In August 1988, a computer was introduced for meteorological analysis and the computation of numerical forecasting models, preparation of predicted weather charts and video releases, and drawing of weather charts through the use of a plotter. During this same time, a supercomputer was also installed to provide a detailed weather forecast model for each local

area. In 1990, a meteorological video network was established to make it easier for weather forecasters to analyze weather data and to provide supplementary weather charts using video images.

The computerization of meteorological tasks was a top priority in the second stage of the National Administration Information System Project. Thus, a unified communication of text, numerical, and video meteorological data was achieved in 1995 with the deployment of the Combined Meteorological Information System. The COMIS also featured regionally distributed processing and installation of intelligent terminals at local offices.

In 2000, a Web-based comprehensive weather information system, COMIS-2 was implemented and continues to be upgraded every five years. In 2010, an advanced weather forecasting system

Exchange of World Meteorological Information

As the World Meteorological Organization (WMO), through its Global Telecommunication System (GTS), promoted the exchange of meteorological data between countries, Korea has come to use a dedicated international line to access the system's two-way global network since June 1971, which allowed the country to receive weather observation data from around the world.

Since its inception, the global meteorological network has continued to expand and operated at speeds of 128kbps between Tokyo and Korea and 64kbps between Beijing and Korea since 2009. In 2016, the dedicated international line was shut down, and a new weather communication system called the Regional Meteorological Data Communication Network (RMDCN, 4Mbps) was introduced for the exchanging of world weather data. Through this new network, the Korea Meteorological Administration (KMA) set up a system to directly exchange various data for weather forecasts with Japan, China, the UK, Germany, Russia, and France.

was set up by combining IT with the latest weather technology. The advanced weather forecasting system consists of analytical tools for meteorological phenomena, a function for detecting signs of dangerous weather based on observation data, and an emergency system for jointly responding to dangerous weather phenomena. Since 2014, efforts have been made to establish a platform to use big data and analytics in various weather forecast fields. Many big data projects are in progress to forecast weather change more accurately and with improved detail.

Along with the advancements outlined above, the Korea Meteorological Administration introduced a supercomputer in 2000 to enhance its weather forecasting capabilities, effectively ushering in the age of numerical weather forecasting. Since then, the Korea Meteorological Administration has continued to apply information technology to its tasks and services. By using supercomputers, KMA launched local forecasting (resolution of 5 km) in 2005, and has operated the world's second finest integrated numerical forecasting model since 2010. In 2016, ensemble forecasts were made possible for the first time by applying an ultra-high resolution (3km) model around the Korean peninsula and have been used operationally.

Computerization of patent information management

Since the mid-1990s, the number of applications for industrial property rights has continued to surge, resulting in a significant increase in the cost of publishing annual patent gazettes and

the time spent waiting for patent evaluations. In order to reduce costs and allow for faster patent processing, the computerization of patent information was selected as one of the key tasks of the Second stage of the National Administration Information System Project.

Against the backdrop of the project, the Korean Intellectual Property Office established the First Industrial Property Rights Administrative Network Plan (1992-1998), which aimed to enhance the international competitiveness of relevant industries and the development of key technologies. In July 1996, the Korea Industrial Property Rights Information Service was launched, allowing patent applications to be filed through floppy disks instead of paper documents.

Korea Industrial Property Rights Information Service (KIPRIS)

The Korea Industrial Property Rights Information Service (KIPRIS) is a patent information search site that allows the public to browse and search the domestic and overseas industrial property information database provided by the Korean Intellectual Property Office. The KIPRIS provides information on domestic patents, utility models, designs, trademarks, and industrial property rights, as well as information on the latest 30 years of patent technology from major countries such as the US, Japan, and Europe.

In January 1999, the Korea Industrial Property Network (KIPONET) was launched. It allowed authorized users to search for patent information online and file paperless electronic patent applications without having to visit the patent office in person. In 2002, the computerization of the patent administration was completed, and patent information was made available online for free to the general public. In 2005, KIPONET II was completed, providing users with electronic application and home examination services for the real-time processing of patent-related tasks regardless of space and time. Through continuous upgrades and revisions since its initial construction, KIPONET has been transformed into “patent.go.kr,” a site that offers various online patent-related services such as patent applications, examinations, checking of evaluation statuses, certificate issuance, confirmation of authenticity, and the payment of fees. As of 2016, approximately 840,000 users visit the KIPRIS and it has a monthly average of 2.65 million hits. It is highly recognized as one of the most specialized sites for patent-related matters.

Computerization of post finance

The computerization of postal savings began in June 1990. The computerized system was the first open and decentralized banking system nationwide and marked a milestone in Korea’s financial history. In addition, the construction of infrastructure suitable for an open and decentralized financial system accelerated the informatization of banking-related industry.

For the operation of the system, the Ministry of Information and Communication co-located servers dedicated to the provincial post offices in its computerization center and connected 2,800 post offices to the servers in the center through dedicated lines, thereby achieving decentralized computerization. This method reduced the risk of system failures and improved overall capacity and transaction speed. At the time, the construction of large-scale banking services using a decentralized processing system was very rare even at a global level. In March 2000, following the operation of a pilot program to test system construction and stability, full-scale services were launched.

The postal banking system introduced new methods not only in terms of system architecture but also in terms of project execution. At the time, most system servers, including those of existing banking computing systems, were dependent on specific monopolistic vendors or products. As a result, when expanding and/or maintaining the system, it was impossible to cut costs by encouraging competition among vendors. In contrast, the open system is built and operated based on standardized specifications, which kept it independent from specific vendors. However, in order to supplement the lack of expertise regarding the new system, project management and information system audits had to be outsourced. The project plan encouraged large companies and small & medium sized businesses to participate in form of a consortium in order to facilitate building up of skills and expertise for domestic small & medium sized enterprises.

2. Computerization in Other Sectors

Electronic document management and exchange system

In October 1996, in order to improve administrative efficiency, the government established an Electronic Document Management System (EDMS) that manages the creation, storage, exchange and control of documents electronically, automating many of the tasks that had been performed manually by public officials. To better support this system, the government established and implemented the Master Plan for Activating Electronic Approval and Electronic Document Distribution and Guidelines for Activating Electronic Approval. The government also aligned

the communication network to electronic approval and electronic document distribution with the revision of Regulations Governing Efficient Management of Administrative Affairs.

In its early days, the EDMS was separately introduced and operated by each individual ministries without any regard to compatibility between the systems. This meant that it was impossible to exchange electronic documents between ministries. To solve this problem, in 1999, the Ministry of Government Administration and Home Affairs announced its Electronic Document Distribution Standards between administrative institutions.

According to the standards set forth, 11 products were tested and designated as standard electronic document systems by 2001, allowing ministries

Three Standards that Enabled Digitization of Document Processing

- Standards for e-documents, their exchange and system interconnection

In July 2001, the Electronic Government Act was enforced, which raised the need for redesigning of the existing documentation flows and the digitization of all documentation procedures – from document production to transfer and preservation. In response to this pressing need, the relevant government organizations joined to draft a plan and strategy for the reorganization and informatization of the document management process as a whole.

Based on this plan, in December 2002, three standards – the e-document system standards, the standards for e-document exchange among administrative institutions, and the standards for interconnection of the e-document system and the administrative information systems – were established to digitize the entire document management process. This standardization enabled digitization of the documentation process and served as a basis for the Regulations on Management of Administrative Affairs and the Public Records Management Act, promulgated in January 2004.

to select one of the 11 products. In 2002, the government set up a support center to expand the distribution of the electronic document system to all administrative agencies. Since 2004, all official document distribution processes between administrative agencies have been performed electronically. Thanks to the electronic document management, the government has speeded up business process and facilitated communication between ministries while greatly improving administrative efficiency by reducing paper documents and document storage space.

In addition to document distribution, task management was another area targeted by the government for computerization. Each government organization had already established and used its own task management system to carry out and manage important national affairs. However, because there were no connections between the systems, administrative efficiency was relatively low. In order to improve efficiency and interconnection, the Ministry of Government Administration and Home Affairs decided to expand the Government Business Management System (On-nara System), which is a standardized version of the e-Jiwon system built and utilized by the Blue House. By December 2006, the government was able to expand the On-nara system to all central ministries, and by June 2017, the system had been distributed to 203 local governments as well as central administrative agencies. This widespread use of the system enhanced the transparency and efficiency of government administration by managing administrative processes and task performances

electronically and assisting in policy decision-making processes.

National Geographic Information System (GIS)

A series of accidental gas explosions in the 1990s pointed toward the necessity of introducing a national geographic information system for the computerization of various maps such as national basic maps, topographical maps, cadastral maps, and underground facility plans. In 1995, in response to this need, the government established a basic plan for the National Geographic Information System (GIS) and promoted the project in four stages from 1995 onwards. The GIS soon became a social overhead capital that played a fundamental role in securing national competitiveness and improving administrative productivity in the years to come.

In the first stage of the GIS project, implemented from 1995 to 2000 with a total budget of KRW 518.7 billion, various maps such as topographic maps, cadastral maps, and underground facilities plans were transformed into digital data, and the development process of the GIS software, which was based on domestic technology, produced a number of skilled workers. During this stage, other applications, such as a land management information and the groundwater information management system that made use of the GIS for other administrative tasks, were also developed. National topographic maps were digitized at various scales such as 1/1,000, 1/5,000, and 1/25,000. By 2001, information on the

underground facilities for water supply, sewage, electricity, gas, and communications had been incorporated into the database. In addition, six thematic digital maps were produced, including city plan maps, road network maps, geographical location maps, and administrative district maps. In the second stage (2001-2005) and the third stage (2006-2010) of the GIS project, the government established a standard system for sharing and linking existing geographical information, while making use of RFID and sensor technology.

In the fourth and final stage of the project (2010-2015), about KRW 4.1 trillion was invested to integrate the individual projects that had been conducted separately by central ministries and local government into the system. This integration allowed the public to easily utilize spatial information and maximized the valuable use of national spatial information as a new growth engine for the nation.

In 2000, the Act on the Building and Utilization, etc. of the National Geographic Information System was enacted for the establishment and utilization of the National Geographic Information System. Later, this act was reorganized and renamed the National Spatial Data Infrastructure Act. Under the Act, an institutional framework was set up for the efficient promotion of the National Geographical Information System at a nationwide level.

Computerization of unemployment insurance

Following the establishment of a Master plan for the computerization of the Employment Insurance Network in 1994, the government set up the Employment Information System in October 1996.

Initially, the system was nothing more than a computing system for data entry and filling out forms related to unemployment insurance, provided in a floppy disk. In October 1998, an Internet-based employment information system was established for the online application of job training and provision of related information online. This system connected 46 job centers and local governments, providing a vast array of recruiting and job search information.

In June 2001, a customer-oriented, one-stop employment insurance service was established. Along with this, Employment Insurance and Industrial Accident Insurance were integrated, and relevant organizations were linked to prevent fraudulent insurance claims. Since then, the Employment Insurance Information System has been steadily upgraded and has increased its services available to the public by linking the four major social insurances.

Section 7.

Getting Ready for the Internet Era

1. Establishment of the Ministry of Information and Communication

Following the successful implementation of the National Basic Information System Project and other projects, the government became more aware of the importance of informatization in improving public services and administrative innovation. However, in order for the government to effectively foster the information industry and accelerate the country's transition towards an informatized society, a government ministry dedicated solely to planning and coordinating informatization policies was needed.

The government addressed this need in December 1994 by newly establishing the Ministry of Information and Communication, dedicated to making policies on informatization and information and communication. Following its establishment, the ministry played a pivotal role in integrating the information and communication tasks that had previously been handled by various individual ministries.

This integration resulted in an enhanced expertise and efficiency gains, in addition to a greater policy consistency. Up until its abolition in 2008, the Ministry of Information and Communication

played a key role in transforming Korea into the powerhouse of information and communication as it is today. The Ministry is credited with having successfully accomplished the commercialization of the world's first Code-Division Multiple Access (CDMA) mobile communication service, the establishment of a high-speed broadband Internet network, national informatization, and the fostering of the information communication industries.

2. Laying the Legal and Institutional Framework for Informatization

In 1995, the Ministry of Information and Communication enacted the Framework Act on Informatization Promotion to support the use of information technology, to foster the information and communications industries, and to establish a high-speed information communication infrastructure. The act also laid the legal groundwork for subsequent information and communication policies, the establishment of an organizational structure for promoting information and communication policies, and the construction of a nationwide high-speed network. In addition, the Informatization Promotion Fund established by the Framework Act became a driving force to fuel major informatization projects.

Under the Framework Act on Informatization Promotion, the Ministry of Information and Communication established the Master Plan for Promoting Informatization, which identified

10 task areas for informatization promotion: e-Government, education, academic research, business, transportation logistics, medical care, environment, safety, and defense. Based on this plan, each ministry established and implemented its own action plan to promote informatization in each relevant field.

In 1996, the Ministry of Government Administration established the Administrative Informatization Promotion Plan (1996~2000) as a sub-plan of the Master Plan for Promoting Informatization and invested a total of KRW 1.5 trillion over the course of five years on its implementation. The plan aimed at achieving four main objectives. First, administrative productivity should be improved through the strengthening of the common use of administrative information and the establishment of an electronic document management system and a video conference system. Second, civil administration services

should be improved through the construction of one-stop civil services, establishment of an EDI system between the public-private sector, and disclosure of administrative information through the Internet. Third, a fundamental administrative information system is to be established through the construction of a high-speed administrative network, the activation of the shared use of administrative information and the standardization of administrative information resources. Fourth, a strong administrative informatization environment should be created through the provision of computer education for public officials, empowerment of promotion organizations, and establishment of a system for protecting personal information and privacy.

As a result of these and other measures, the Administrative Informatization Promotion Plan provided the solid foundation for Korea's e-Government.

CHAPTER

2

Achieving an Advanced e-Government

Section 1

The Era of e-Government

1. Preparation for Advanced e-Government

President Kim Dae-jung administration, which took office in February 1998, restructured the cabinet to overcome the financial crisis by increasing the efficiency of government operations. It integrated the Ministry of Government Administration and the Ministry of Home Affairs into the Ministry of Government Administration and Home Affairs to facilitate local autonomy. This reorganization broadened the scope of the e-Government initiatives from central government level to a national one that included local governments.

The vision and strategy of e-Government in 1998 by the Ministry was officially adopted as a part of national informatization policy. It defined e-Government as the use of information technology to transform the government to enable citizens and businesses easier and faster access to a variety of information and services and to increase the productivity and effectiveness of administration and policy at the same time, thereby leading informatization and knowledge based-society. Its objectives include; first, offering one-stop services anytime, anywhere without complicated requirement of documentation,

second, seamless flow of information by electronic means, and third, enhancement of transparency through open communication channels, information disclosure and protection.

The government formed the e-Government Special Committee in 2001 to coordinate the differences between ministries during the process of implementing its e-Government and to examine and evaluate performances. The committee was formed of experts from the private sector and vice-ministers of relevant ministries. It selected the 11 Priority e-Government Initiatives to be reflected in the e-Government projects and moderated the differences between ministries in the project implementation process. It also performed the role of checking and evaluating the performance of the project. The activities of the e-Government Special Committee are considered to be the most successful examples of the achievements by the government's ICT-related committee to date. The reasons for its success can be generally summarized as follows: First, it obtained a regular reporting channel through the Office of the President, receiving a great deal of attention and support from the President. The committee was also able to secure expertise and driving forces for decision making with the participation of the ministries responsible for informatization, budgeting, and administration as well as professionals from the private sector. Second, it expanded the scope of existing informatization projects led by single ministry to include the interface and interactions between multiple ministries and pursued administrative innovations using information technology.

11 Priority e-Government Initiatives

| Category | Initiatives | Project Name | Managing Agency |
|--|---|---|--|
| Upgrade Government Services for Citizens and Businesses | Innovation in civil affairs through a single point of contact | <ul style="list-style-type: none"> - Development of common utilization system of five leading national databases such as those on residents and vehicles - Opening of the e-Government Service Office | Ministry of Government Administration and Home Affairs Ministry of Information and Communication Ministry of Planning and Budget |
| | Implement and interconnect four major social insurance systems | <ul style="list-style-type: none"> - Integrated billing, personal information interface, integrated insurance information searches, etc. | Ministry of Health and Welfare Ministry of Labor |
| | Development of integrated governmental e-procurement system | <ul style="list-style-type: none"> - Online execution of all procurement procedures such as vendor registration, bidding, contracting, and payment and development of single window for procurement | Ministry of Planning and Budget Ministry of Information and Communication |
| | Provision of comprehensive tax services over the Internet | <ul style="list-style-type: none"> - Internet-based tax administration services | National Tax Service Ministry of Finance and Economy |
| Improve the Efficiency of Administration | Development of national finance information system | <ul style="list-style-type: none"> - Development of double-entry bookkeeping and accrual accounting system - Development of information sharing and interface between finance-related agencies | Ministry of Finance and Economy Ministry of Planning and Budget |
| | Development of local government information system | <ul style="list-style-type: none"> - Addition of eleven types of information systems including family registration to the existing ten types | Ministry of Government Administration and Home Affairs Seoul Metropolitan City |
| | Development of national education information system | <ul style="list-style-type: none"> - Development of online distribution of academic affairs and educational administration data by interfacing the schools, the Office of Education, and the Ministry of Education | Ministry of Education & Human Resources Ministry of Finance and Economy |
| | Development of standard personnel policy support system | <ul style="list-style-type: none"> - Improving personnel policies through paperless administration and building of database on all civil servants | The Civil Service Commission |
| | Establishment of electronic workflow and electronic document distribution | <ul style="list-style-type: none"> - Electronic processing of government documentation and development of real-time document distribution system | Ministry of Government Administration and Home Affairs |
| Establish Infrastructure for e-Government | Development of e-Government seal system and distribution of electronic signature system | <ul style="list-style-type: none"> - Development and expansion of government-wide electronic authentication system | Ministry of Government Administration and Home Affairs Ministry of Information and Communication |
| | Building of government-wide integrated information system environment | <ul style="list-style-type: none"> - Development of joint operational system of data centers operated by various agencies | Ministry of Government Administration and Home Affairs Ministry of Information and Communication Ministry of Planning and Budget |

Along with the strong leadership of the President, the activities by the e-Government Special Committee succeeded in bringing about the initiatives of the e-Government implementation agendas. A Briefing Session announcing the completion of the e-Government Platform was held in November 2002, and the official launch of the e-Government was declared. Descriptions of the 11 Priority e-Government Initiatives divided in three categories are shown in the table on the previous page.

2. Enactment of the World's First e-Government Act

As the projects to build an e-Government began at the end of the 1990s, limitations for defining specific e-Government policies were apparent with the existing Framework Act on Informatization Promotion. Thus, the academia, government and the National Assembly began making efforts to pass an e-Government Act beginning in 1998. As a result, the Act Concerning the Promotion of the e-Government Administrative Services for the Realization of the e-Government(The e-Government Act) was enacted in February 2001, the first one of its kind in the world.

The law has since been amended to cope with the rapid advancement of information technology, and the e-Government Act has been organized into 89 Articles in 7 Chapters as of July 2017. The main details include: First, the basic principles for the implementation of e-Government policy; second, provision and utilization of e-Government

services (including electronic processing of civil services such as provision/utilization of e-Government services); third, construction and utilization of hubs for e-documents, administrative digital signatures, and construction and utilization of common infrastructure system; fourth, adoption and utilization of information technology architecture and laying the groundwork for efficient management of information resources; fifth, pre-consultation for the implementation of the e-Government projects, performance analysis and diagnosis, international cooperation, designation of a dedicated agency, etc.

The e-Government Act has served as a key infrastructure for e-Government policy and project implementation throughout the changes, developments over the years. Although it initially focused on specifying the basic principles and procedures and methods for implementing electronic processing of administrative projects, it has undergone gradual upgrading to cope with the advancements of the e-Government services. These upgrades include expanded sharing of administrative information, strengthening of security, and prevention of duplicated investment on e-Government projects. It particularly contributed to the implementation and dissemination of stable e-Government services by providing the grounds for implementation of related support projects. It also eliminated institutional obstacles to the implementation process, and led to the revision of more than 700 individual laws and regulations related to government services, leading to a decrease in required documents and electronic processing of administrative projects.

3. Implementation of e-Government Support Projects

The e-Government support projects are those executed by the Ministry of Government Administration and Home Affairs to provide the administrative, financial, technical, or other support necessary to help administrative and public agencies efficiently pursue e-Government projects under Article 64 of the e-Government Act. The subjects of the e-Government support projects include the following: First, projects that can maximize the benefits of informatization through linking of agencies and sharing of information; second, projects that can promote innovation of work in the public sector through informatization to increase the efficiency of administrative projects and improve services to citizens; third, projects with high priority and great potential, but lacked support for implementation due to circumstantial limitations.

The Ministry of Government Administration and Home Affairs was responsible for establishing policy and securing funding for e-Government projects, while the Project Deliberation Committee was in charge of selecting the projects to be supported. The National Information Society Agency was exclusively responsible for tasks related to the projects including selection of contractors, management, auditing, and technical support.

The e-Government support projects started to be implemented under the Kim Dae-jung

administration following the enactment of the e-Government Act in 2001. Since then, later administrations have implemented their own key policies such as “11 Priority e-Government Initiatives” and “31 e-Government Roadmap” using the Act as the foundation. Between 2001 and 2016, the government invested a total of KRW 2.1749 billion in 484 projects to deploy e-Government services including services for the convenience of the people, strengthening of economy and social safety, and the administrative efficiency project. These projects have played a key role in establishing Korea’s leading e-Government services such as Minwon24(Civil Service Portal), HomeTax(Electronic National Tax System), Nara Jangteo(Korea ON-Line E-Procurement System), and Administrative Information Sharing Service. The sharing of administrative information with all relevant ministries for project implementation, in particular, has greatly contributed in efficient executions of the projects, by bringing down the boundaries between ministries and transferring information seamlessly for the convenience of the people.

Section 2

Establishment of Basic Infrastructure of the e-Government

1. The Information & Communication Network for e-Government

The Korea Information Infrastructure (Information Super Highway) Project was completed in 2005, five years ahead of schedule set for 2010. As a result, public institutions were able to start using the services in 2006. The construction and management system of information and communication networks for administrative ministries has later been integrated to improve the efficiency of operation and management. This led to a restructuring of the communication network for administrative agencies into the national backbone network (K-Net) and the government network service (GNS).

Establishment and operation of the Government Backbone Network (K-Net)

The National Backbone Network was established by the Ministry of Security and Public Administration's Integrated Data Center to allow government agencies, to share information between them. The network is used for communications between administrative agencies, in which Internet, business, and voice traffic have

been separated to improve quality and stability. The communication networks where traffic is the busiest—the Government Integrated Data Center in Daejeon and the Seoul City Hall Annex—have been simplified and reinforced with dual transfer lines for greater stability. Also, the bandwidth was allocated based on maximum traffic to ensure sufficient expandability. The Internet network was simplified to optimize daily access based on the Government Integrated Data Center in Daejeon and the Seoul City Hall Annex. The international network has been designed to be run separately to provide security. In addition, the Internet connection environment of administrative agencies were adjusted for improved efficiency.

In addition to the integration and reconfiguration of communication networks and improvements in Internet connection environments for administrative agencies, the exchange networks were also integrated and configured to optimize the distribution of information traffic.

Government Network Service (GNS)

The Government Network Service is the information and communications service that is exclusively designated for government agencies. It features stronger security and stability and more effective communication for government agencies (administrative, legislative, judicial) and local governments. The Government Network Service infrastructure is a dedicated administrative agency network that uses the facilities of commercial telecommunication service providers completely separate from the commercial network. The

contact point with the commercial network is unified and integrated to the Government Integrated Data Center. The government signs an agreement for use of the infrastructure every three years to certify that government agencies continue to use it at low costs. In 2009, during the first stage (2009~2012), a nationwide network was established, and in 2013, during the second stage (2013~2016), a bundled telephone-Internet service was introduced. In 2016, during the third stage (2016~2019), mobile services were introduced, and usage fees are expected to be cut by 19% compared to the second stage, resulting in budget savings of up to KRW 118.2 billion.

2. Construction of Electronic Authentication & Security System

Digital signature authentication management system

The distribution of computers and development of information and communication networks have accelerated by the 2000s. As a result, the electronic processing of civil services and e-commerce has also increased. This has led to increased anxiety over potential unauthorized manipulation of documents exchanged electronically.

The government had already prepared to cope with this potential problem by enacting the Digital Signature Act in 1999, which was designed to ensure the security and reliability of e-commerce through verifications of identities of transaction

counterparts, and forgery or alterations of e-documents, etc. The Ministry of Government Administration and Home Affairs introduced the e-Government Signature (GPKI) for the distribution of electronic documents between administrative agencies, the prevention of forgery and alteration, and the identification of civilians through the e-Government Act. GPKI provided the legal grounds for the processing of government services, exchange of e-documents between agencies, and sharing of administrative information over the Internet, and strengthened security.

Digital signature certificate

The digital signature certificate provides additional features such as the protection of personal information and a non-repudiation function for e-commerce transaction records compared to the identification method using the ID and password. As such, the use of digital signature certificates became mandatory for Internet banking in September 2002 and online securities trading in March 2003. A system for promoting the use of accredited certificates when paying online with a credit card was enacted in 2005. Since then, the scheme has been expanded to e-Government services such as e-application, year-end tax settlements, and electronic procurement.

A total of 35.45 million National Public Key Infrastructure (NPKI) certificates had been issued as of December 2016, with 31.35 million issued to individuals, representing 114% of the economically active population in Korea (27.44

million persons).

A total of 1.43 million GPKI certificates has been issued as of December 2016, and are being used for 7,522 e-Government administrative services by 859 agencies to check the identifications of civil servants and prevent falsification of e-documents, etc.

A digital signature authentication service based on security tokens was introduced in 2007 to prevent leakage of digital signature certificate information from hacking or “phishing,” made possible as security tokens use a portable storage unit. Also, the government provides a variety of authentication services such as government OTPs (One Time Password), composite authentication (2 channels), and verification of authenticity of e-documents to strengthen the security of the e-Government services.

Implementation of an integrated authentication system and strengthening of information protection platform

The government developed a single sign-on (SSO) system for the e-Government systems in 2009. The various user authentication and access management schemes used by each administrative agency and business operational system became vulnerable to information leakage. Moreover, it was inconvenient for users, as they had to log in repeatedly every time they wished to use a different e-Government system. An integrated access management system has further strengthened security by organizing integrated account management, single authentication and

integrated access rights management.

On the other hand, as information and communication technology has been employed to society as a whole, the methods of electronic infringement have also become intelligent, and the harmful effects have also gradually increased. In response, the government has further strengthened its information security infrastructure and information protection activities. An information system assessment and certification scheme has been in operation since 1998 to introduce security products with proven safety and reliability records when implementing new systems. A “Security Assessment Scheme” has also been running for review of security matters in advance when implementing a new system. In addition, an information security management system (ISMS) has been in operation since 2009. Also, in 2011, secure coding has been mandatorily applied when developing e-Government services to eliminate software security vulnerabilities in advance.

Section 3

Establishing Service Platforms for Citizens

1. Local Administrative Information System

In May 1995, Korea opened an era of full municipal autonomy with the holding of the 4th provincial elections. Following these elections, local governments implemented a variety of information system projects to improve local administrative services in earnest. In the process, duplicated investments in the same administrative system and informatization gaps between regions due to diverse financial statuses have been brought up as issues. The informatization gaps were serious problems that could cause inequality in the electronic use of administrative services for local residents who are the intended beneficiaries. Moreover, it was a waste of budget for each municipality to invest in redundant

implementations of systems that deal with the same projects.

To resolve this problem, the Korean government established the “Implementation Plan to Promote Local Informatization of Municipalities (1997~2000)” in 1997. In 1998, it kicked off a project to implement the local government administrative information system that was shared by all cities and counties nationwide. It had invested about KRW 150 billion by 2002 to develop and distribute standard systems for 21 administrative projects in health and welfare, environment, resident services, and architecture of local governments. It also launched an Internet service in November 2002 allowing citizens to obtain certification documents without having to visit an offline administrative office. Kiosks were set up to issue official forms in public areas such as department stores, banks, and subway stations nationwide.

With the wide availability of the Internet, it was necessary to transform the existing C/S (client/server)-based system to ones that are

Informatization of Local Administration

Local governments execute most of the administrative projects and government services delegated by the central government. Of the projects executed by metropolitan and municipal administrative information systems used by the local governments, 60-70% are related to affairs delegated by the central government and joint affairs with the central government. Therefore, the local administrative information systems in direct contact with the people are the backbone of the e-Government as they provide the root information for national policymaking and are the providers of services.

Web-based to overcome software maintenance limitations. It was also necessary to standardize the hardware and software infrastructure so that all local governments could operate the information systems under the same infrastructure environment. As such, the government began a project to upgrade online local government administrative information systems, expanding the project nationwide between 2005 and 2007. A public contest resulted in the name “Sewol” being chosen to identify the project. The project enabled all local governments to use a standardized administrative system without repeated development and to share information such as statistics between the central and local governments. In addition, in conjunction with the G4C portal, the government handled public complaints on the Internet, making it easier and more convenient for citizens to use e-Government services.

2. National Online Personal Information Service

In Korea, the Family Registry System was the official ledger that serves as verification of the relationships between families and within a family. Since it was the fundamental basis for census and inheritance, digitalization of the system was essential.

The digitalization of the Family Registry System began first in Seoul, Incheon, and Gyeonggi Province in 1993. The paper-based family registration information of all citizens was digitalized between 1999 and 2002, and the nationwide online service became available in 2002. The family deregisters, which bound the erased family registers, were digitalized between 2002 and 2003, and its nationwide online service

Family Registers

The family register was the official ledger that clarifies identities. It was organized into family units and defines the relationship between the head of a family and other members. It was modified when there was a birth, marriage, or death, and a system existed for passing on the head of the family status to the next person in order when there was a change such as death. As such, it was an important document to determine family support as well as inheritance when a family member passed away. The family register was abolished on January 1, 2008 and replaced by family relationship register.

Family Deregisters

A family deregister is a ledger of records of the family head and family registration being erased due to inheritance of the status of family head, the absence of offspring for the family head, or other reasons. Two copies of the family register were kept: the original copy by the local municipal government is to be kept permanently, and a second copy by the overseeing court. The family deregister is separated from the family register and bound into a separate ledger in the sequence of deregistration and kept for 80 years.

was made available beginning in 2003.

The patriarchal family registry system was judged unconstitutional in 2005, and was abolished and replaced by the new family relationship register in 2008. The existing family register information was migrated to the family relationship registry system accordingly. Digitalization of the family register and family relationship register greatly improved the accuracy of this important basic information of a country. It was also linked to the relevant systems such as resident registration and taxation for other government services, and has worked to provide great convenience to the people, since they have become conveniently available over the Internet.

3. Information Network Villages(INV) Project

In March 2001, the Ministry of Government Administration and Home Affairs announced the Master Plan for establishing pilot Information Network Villages to revitalize local economy. It also sought to balance regional development through the establishment of greater access to the Internet and develop local information content to create additional income. The project began with 25 pilot villages in May 2001 and expanded to a total of 337 villages by June 2008.

Information Network Villages worked to increase access to the Internet to narrow the information gap and developed an e-commerce system to

increase local incomes. As a result, households with Internet access increased by 51.2% compared with the initial period. Moreover, the average income for the residents of these villages increased by more than 200% to reach KRW 49 million through the e-commerce site, invil.com, which provided a venue for sales of local specialty products along with “village experience” products. Residents developed a voluntary operation system to create the village homepage for promoting and sending out local news. As a result of these successful outcomes, the Information Network Village Project received the Special Award at the World e-Government Forum in 2006 and was named the winner of the UN Public Service Awards (PSA) in 2011 as the best practice of informatization of global farming and fishing villages.

Section 4.

Promotion of Service Innovation

1. Unified and Convenient Provision of e-Government Services for Citizens

Citizen-centered civil services

The part of the e-Government that is most directly

experienced by the people is the online civil services. This is because they allow citizens to process administrative projects over the Internet at the convenience of their own homes without having to visit an offline administrative office.

The Ministry of Government Administration and Home Affairs established plans to redesign government services and develop information systems in the five areas, namely, resident registration, real estate, automobiles, taxes, and corporations. In 2002, the government service for citizens portal (G4C) opened through adjusting legislation and regulations and system implementation. The system had been upgraded up until 2005 to expand the scope of recipients of online government services and to offer one-stop handling of tasks such as birth and automobile registrations that had previously required visits to multiple agencies. This has resulted in allowing the expansion of up to 591 civil service consultation cases and 29 civil service documents available for downloads via the Internet. People are now also able to connect to the G4C portal through private Internet portals.

In September 2005, technical security for preventing forgery and falsification was strengthened due to the rising awareness towards the possibility of forgery of civil documents issued via the Internet. It added measures to prevent reproduction and verify legitimacy of all issued documents (2D barcode) and to verify the time of issuance (time stamp) to prevent forgery and counterfeiting of all civil documents issued online. It also added functions to allow sound recognition

of documents for the visually impaired. Other added features include the ability to submit an issued document to a third party electronically without having to print out a hard copy. This feature led to an administrative information sharing project that enabled government agencies to access information managed by other agencies to eliminate the process of an agency issuing a document to a user who then submits it to another agency.

G4C was renamed “Minwon24” through a public naming contest. Minwon24 went through continuous upgrading until 2015 and now allows users to request 1,007 civil services over the Internet and request/access 32 types of services through their smart devices. It also provides 41 types of living information customized to each person. The number of members increased about 117-fold between 2002 and December 2016 to become 15.28 million, and online requests increased 86-fold to reach over 120 million. The average number of visitors per day also increased from about 30,000 in 2002 to more than 310,000 in 2016, and up to 877,000 people visited during the year-end tax settlement period. Minwon24 was awarded the runner-up position at the UN Public Service Awards.

Integration of the 4 major social insurance services

Social insurances related to health and welfare have utilized the information systems earlier than other areas due to the fact that informatization is essential in processing large volumes of data fast.

However, different ministries were managing each of the four social insurance programs separately—occupational health and safety insurance, employment insurance, national pension, and national health insurance. As such, the biggest challenge in the social insurance field at the time was system connection and integration. The whole process was inefficient since the agencies each performed the similar tasks of sending and collecting bills and reporting changes. To solve this problem, the government generated an information strategy plan (ISP) in 2001 and developed the Four Social Insurance Information Interface System by 2003. This system unified the online window for social insurance services and provided related information such as subscription history over the Internet. It also integrated processing of common tasks such as Internet billing and payment and reporting of subscriber changes. Moreover, it allowed all relevant agencies to share the required information such as taxation and resident data. A portal www.4insure.or.kr for all four social insurances was opened to the public in 2002.

In 2010, the government amended various laws to integrate the social insurance billing and fee collection processes that the National Health Insurance Corp., the National Pension Service, and the Ministry of Labor carried out in duplication. The integrated social insurance billing system deployed in 2011 unified the billing and fee collection work under National Health Insurance Corp. The system now serves as a single window to send bills, collect premiums, and process delinquent accounts for all four social insurance

programs. It allows access to all related services over the Internet, but users can also visit any one of the offices for the four social insurances to subscribe, change, or withdraw subscription to any insurance. Greater efficiency in management and operation has led to significant reductions in cost.

Integrated government e-procurement service

The procurement EDI (Electronic Data Interchange) project allowed for the electronic processing of procurement administration projects between the Public Procurement Service, end-user agencies, vendors, and other relevant agencies. KRW 10 billion in taxpayer funds was invested over the four years between 1997 and 2001. As a result, the public EDI system now handles 87% of procurement work in the public sector through electronic bidding, etc.

However, procurement information was difficult to access due to the fact that there was no single window to provide it, and the possibility of corruption between civil servants and vendors existed. The ISP established in 2001 simplified the complex procurement process and unified the government procurement window to expand opportunities for vendors in the private sector. In 2002, the government launched a national integrated online government procurement system (G2B) and started providing service.

The government continued to develop this next-generation online procurement system, succeeding

in increasing system stability and expanding the linkage with other systems and launched a new service in 2013 known as “Nara Jangteo(Korea ON-Line E-Procurement).” This system greatly increased efficiency and transparency in the public procurement process by having the entire process done through a single window online. A one-time registration lets vendors access all bidding information disclosed by public agencies as well as participate in bidding, query bidding status, and sign contracts electronically. Public institutions can now carry out standardized procurement tasks using the integrated procurement system without the need for a separate system. Item and service categorization allows conformity with international standards and easy linkage to other systems. A “Smart Nara Jangteo” service is also available via mobile devices.

The integrated online government procurement system was selected as the “Best Practice Model for Electronic Procurement” in a UN e-Government assessment in 2004. In 2005, the UN e-document standardization organization, UN/CEFACT, adopted the electronic procurement procedure of Nara Jangteo as the international standard. In 2011, the M-Gov Report by the OECD & ITU selected Smart Nara Jangteo as one of the world’s top four mobile government services. Owing to this success, Vietnam, Costa Rica, Mongolia, Tunisia and many other countries have adopted the system for themselves.

2. Transforming the Delivery of Government Services & Launching of e-Government Portal

Tax Integration System (TIS) and Home Tax Service (HTS)

The real-name financial system was fully implemented in Korea in 1993. With this as a momentum, the implementation of the National Tax Integration System began in 1994 and opened in 1997. The project digitalized the huge volume of tax data that had previously been processed manually and thus greatly increased administrative efficiency.

However, the people still had to go through the inconvenience of having to generate tax reports and visit an offline tax office for submission or mail them in. As a solution, a pilot electronic tax report as part of the National Tax Integration System was introduced in 2000. In 2002, an electronic payment system was introduced for tax accountants, signaling the beginning of the Home Tax Service (HTS).

In 2003, the Home Tax Service was upgraded and extended to include direct taxes such as income and corporate taxes in addition to indirect taxes and established a G4C enabling users to perform the entire process of reporting, billing, payment, and inquiry online without having to visit a tax office. Continued upgrading of services brought about the implementation of services such as CRM (Customer Relationship Management),

IST (Integrated Service for Taxpayers), online issuance of tax payment certificates, and mobile services from 2005.

An investment of about KRW 200 billion for the implementation of a next-generation national tax administration system was executed between 2012 and 2014 to develop the next tax administration system, and was launched in full-scale in 2015. This system made it possible for people to access all tax-related services such as tax reporting, issuance of the certificates, queries on cash receipt usage, issuance of and query on electronic tax statements, and queries about the year-end tax settlement with a single login.

As of 2016, 96.1% of income taxes, 98.5% of corporate taxes, and 88.9% of value added taxes (VAT) were reported online, with over 2.7 million people using the system for the year-

end tax settlement. The system has worked to improve both administrative efficiency and the convenience of the people.

National Education Information System (NEIS) Service

The National Education Information System (NEIS) is a system that accumulates and processes education-related information generated by elementary schools, middle schools, high schools, and special-education schools in order to conduct educational administrative projects, and provide various services to the public.

However, The National Education Information System was faced with strong opposition due to its excessive collection and management of personal information of students, parents, and teachers, which contain excessive private

Social Conflict around the National Education Information System

The National Education Information System (NEIS) accumulates and processes education-related information generated by elementary schools, middle schools, high schools, and special-education schools for educational administration and services for citizens.

At the time of its initiation, the government declared it a tool for educational informatization that allowed users to process a variety of academic services and statistics quickly and conveniently and check the school activities of their children from home.

However, opponents argued that it was a “national control system” that could infringe on the human rights of students, parents, and teachers under the pretense of educational informatization.

Strong conflicts between the government and the Korean Teachers and Educational Workers' Union and civic groups continued for several years, and at long last, privacy protections and security were strengthened, and compromises reached by all sides. This served as an opportunity to recognize the importance of privacy.

information and cause overloading of teachers' work. As such, the system developed in 2001 to 2002 was hardly utilized after its initial launch in 2003. Conflicts for more than three years between the Ministry of Education, teacher organizations, parent organizations, and civic groups led to social consensus by agreeing to adjust personal information to be managed, encryption, restructuring to focus on academic affairs, and to build databases for each individual school. The National Education Information System was relaunched after a system overhaul in 2006.

The next-generation National Education Information System that was integrated into each Office of Education unit and came with many enhanced functions was developed in 2011 and continues its operation. The system allows teachers to perform school, academic, and general administrative projects with a single login through the NEIS portal. Moreover, parents and students can also log onto the system at any time, anywhere to access the student's own school records and grades. In addition, it has become possible to apply for and receive documents related to education, including graduation certificates, school records, and proof of employment, through the Home Edu Service available at neis.go.kr.

Immigration management services

The Ministry of Justice began the computerization of the immigration administration service in 1980. At the time, the information system was used for simple querying of the database for records of persons entering and departing Korea and records

of persons banned from entering or departing. People had to wait in long lines to enter and exit the country, and the inspection procedure was cumbersome.

The Ministry of Justice launched the Korea Immigration Smart System (KISS), which drastically improved the existing procedure for entries and departures in 2001 in preparation for the opening of Incheon International Airport. The system improved the administrative processes overall for inspections, issuance of visas, management of stays, handling of criminals, and protection of foreigners.

Then the September 11 attacks in the United States in 2001 raised the need to strengthen the monitoring of entries into and departures from Korea while still avoiding great inconvenience. As such, the Korean government established its plans for TIPIS (Technological Infrastructure for Progressed Immigration Service) in 2004. The plan included projects divided in stages to increase accuracy and promptness of immigration management by identifying passport alterations and falsifications by using cutting-edge biometric information technology. Continued efforts put into the projects resulted in electronic reading of passports and advanced analysis of airline passenger information, and omission of entry/departure forms. Moreover, kiosks were installed for automated entry/departure inspections using fingerprints, issuance and checking of electronic passports, and face recognitions. It additionally extended its services to RCSS (Remote Crew Self-check System) and ACPS (Automatic Crew

Perception System) to drastically simplify the inspection procedures for airline crews.

As a result, Koreans and foreigners entering and departing from Korea have come to experience immigration inspections that are unheard of faster yet safer than any other international airports in the world.

Launching of the e-Government portal

Korea has seen progress in democratization and informatization since the 1990s. As a result, the interest and desire of citizens to participate in state affairs have also increased. The demand for administrative information has particularly increased, and the government agreed to disclose more administrative information to meet this demand.

In 1993, the Ministry of Government Administration launched its Open Government Service System after expanding and enhancing its National Administrative Total Information System (NATIS). However, the information provided was limited because it consisted of work related information within the Ministry of Government Administration and open only to public officials.

With the rapid spreading of access to the Internet, the e-Government portal (www.egov.go.kr) opened by the government in 2002 became the main contact point between citizens and the government. It allowed for communication between the two parties and for the participation of citizens in politics and administration.

However, the service failed in receiving high satisfactory reactions because the information was not promptly updated. The Korean government portal (www.korea.go.kr) was thus opened in 2009 as an integrated window as a one-stop e-Government services from a variety of agencies seamlessly.

Section 5.

Expansion of e-Government Services

1. 31 e-Government Roadmap

The Participatory Government that began in 2003 established three strategies to create the world's best open e-Government. First, it was to develop a networked government through the innovation of service delivery. The purpose of this strategy was to expand government services and improve the quality of service for citizens by overcoming temporal and spatial limitations by way of using information technology. Second, it was to implement a knowledge government through greater administrative transparency and responsibility. This was to be achieved by expanding public disclosure, sharing, and shared uses of administrative information owned by

| Category | Agenda | Roadmap Project | Managing Agency |
|---|---|---|--|
| Innovation of Work Process | Establishment of electronic business process | 1. Electronic Document System | Ministry of Government Administration and Home Affairs National Archives of Korea |
| | | 2. Finance System Enhancement for Central and Local Governments | Ministry of Government Administration and Home Affairs Ministry of Finance and Economy |
| | | 3. Local Government Information Network System | Ministry of Government Administration and Home Affairs |
| | | 4. Electronic Audit System | Board of Audit and Inspection |
| | | 5. Electronic Administration System for National Assembly | Secretariat of the National Assembly |
| | | 6. Integrated Criminal Justice System | Ministry of Justice Supreme Prosecutor's Office National Police Agency Office of Court Administration |
| | | 7. Personnel Policy Support System | Central Personnel Committee Ministry of Government Administration and Home Affairs |
| | | 8. Electronic Diplomacy System | Ministry of Foreign Affairs and Trade |
| | | 9. Real-time Management System of National Agenda | Office of the President Ministry of Government Administration and Home Affairs |
| | Sharing of administrative information | 10. Information Sharing System | Ministry of Government Administration and Home Affairs |
| Business redesign centered on services | 11. Development of government business relationship model | Ministry of Government Administration and Home Affairs | |
| Innovation in Services to Citizens | Advancement of services to citizens | 12. Enhancing G4C Services | Ministry of Government Administration and Home Affairs |
| | | 13. National Disaster Management System | National Emergency Management |
| | | 14. Integration of DBs for Buildings and Land Registry | Ministry of Construction and Transportation Ministry of Government Administration and Home Affairs |
| | | 15. Home Tax System | National Tax Service |
| | | 16. National welfare System | Ministry of Health and Welfare |
| | | 17. Integrated Information System for Food and Drugs | Ministry of Food and Drug Safety Ministry of Agriculture and Forestry Ministry of Maritime Affairs and Fisheries |
| | | 18. Employment Information System | Ministry of Labor |
| | 19. Internet System for Administrative Judgment | Ministry of Government Legislation | |
| | Advancement of services to large companies | 20. Business Portal System (G4B, Government for Business) | Ministry of Trade, Industry and Energy |
| | | 21. Integrated Logistics Information System | Ministry of Maritime Affairs and Fisheries Korea Customs Service |
| | | 22. Information System for International Trade | Ministry of Trade, Industry and Energy Korea Customs Service |

| Category | Agenda | Roadmap Project | Managing Agency |
|--|---|--|--|
| Innovation in Management of Information Resources | | 23. Foreigners and Foreign Business Support System | Ministry of Trade, Industry and Energy Ministry of Justice Ministry of Labor |
| | | 24. Support for Exporting e-Government Solutions | Ministry of Information and Communications |
| | Expansion of electronic participation of citizens | 25. Online Citizen Participation Portal System for Citizen Participation | Ministry of Government Administration and Home Affairs National Election Commission |
| | Integration and standardization of information resources | 26. Building Government-wide Computer Resource Center | Ministry of Information and Communication |
| | | 27. Strengthening e-Government Communications Network | Ministry of Information and Communication |
| | | 28. Introducing EA Methodology | Ministry of Information and Communication |
| Enhancement of information protection system | 29. Strengthening Information Security System | National Intelligence Service Ministry of Government Administration and Home Affairs Ministry of Information and Communication | |
| Specialization of manpower and organization | 30. Training IT Manpower and Restructuring IT Organizations | Ministry of Government Administration and Home Affairs | |
| Improvement of Legislation | Improvement of e-Government related legislation | 31. Updating Legal System for e-Government and Security | Presidential Committee on Government Innovation |

the government. Third, it was to be reborn as a “participatory government” that realizes true popular sovereignty, which involves citizens’ direct participation in national government affairs, presentations of opinions, and receiving feedbacks.

To implement an e-Government to meet these goals, the government created an e-Government Advisory Committee under the Presidential Committee on Government Innovation & Decentralization in April 2003. Through the committee, the government deduced the e-Government roadmap projects, examined and evaluated execution, and played as arbitrator as needed. In April 2005, the committee was elevated to the deputy-ministerial level and renamed the

e-Government Special Committee, and in August 2003, it announced the official e-Government Roadmap of the Participatory Government. The roadmap consisted of 10 agenda items of 31 roadmap projects in 4 categories including “Innovation of Work Process,” “Innovation in Services to Citizens,” “Innovation in Management of Information Resources,” and “Improvement of Legislation.”

The Participatory Government designated the e-Government projects as the presidential agenda for government innovation and invested considerable manpower and budget, which was a great contribution that resulted in making Korea’s e-Government the world’s best today.

2. Innovation of Work Processes

Digital budget and accounting system

The systems related to national budgeting, execution, and settlement included the “Budget Information System” developed by the Ministry of Planning and Budget in 2000 for budget generation and the “National Financial Information System” developed by the Ministry of Finance and Economy in 2002 with a focus on treasury and accounting settlement. However, these systems did not provide integrated financial data since budgets and expenditures were handled by separate systems. Moreover, it was necessary to introduce financial system innovation such as a double entry system, accrual basis of accounting, and performance management. As such, the Korean government decided to develop a digital budget and accounting system in 2004, completing it in 2006.

The digital budget and accounting system is an integrated financial information system that executes the entire financial process online and monitors financial status in real time. Moreover, it is a performance-centered system which introduces the concept of management and the principle of competition in national finance. The government began to use the integrated system to run its national financial operations such as budget generation, expenditures, and settlements. With the implementation, the government carried out upgrades to the projects on systems related to business management, the national treasury, performance management, open finances, and the

e-Nara Treasury System between 2011 and 2015.

The digital budget and accounting system, namely D-Brain, has a total of 64,254 registered users, including 49,872 from central administrative agencies, 10,992 from local government, and 3,390 from more than 330 public committees and agencies as of the end of 2016. It has become the key system for national financial management with an average daily use by 15,532 people, daily transfers amounting to KRW 8 trillion from national funds, and daily collection of KRW 4 trillion. It received the Grand Award by the UN CEPA (Committee of Experts on Public Administration) in 2013, and the Korean government has signed MOUs with a total of seven countries on technical cooperation.

Integrated criminal justice information system

Korea’s criminal justice procedure had had many problems for a long period of time. The police, Prosecutor’s Office, and courts managed their own criminal justice information independently, often in duplication, with almost no information flow between them. One would have to submit thousands of pages in paper documents for a criminal case and visit each relevant agency to resolve a petition. Moreover, a civil petitioner had the inconvenience of having to find out the different case numbers issued separately by different agencies in order to check the progress of a single case.

To resolve this issue, the government included

an integrated criminal justice information system as one of the 31 roadmap projects in 2003 and formed a committee to implement it in 2004. However, there was controversy over human rights issues due to the sharing of sensitive personal information and strong opposition from the police on the system being centered on the Prosecutors' Office. Although the system was developed in two stages between 2005 and 2007 despite the controversy, it failed to be utilized.

Hence, the government established and enacted the legal foundations such as the Act on Promotion of the Digitalization of the Criminal Justice Process and the Act on the Use, Etc. of Electronic Documents in Summary Proceedings, during the 3rd and 4th stages of the projects between 2008 and 2009 to promote the use of the system. As a result, KICS (the Korea Information System of Criminal Justice Services) was completed in July 2010. This enabled criminal justice agencies such as courts, the Prosecutors' Office, and the police to investigate, prosecute, judge, and execute criminal cases using a standardized system and share the information generated during the process. The criminal justice portal was opened in 2013 to handle 74 types of government services such as case queries, electronic petitions, court record queries, notice queries, and online queries about fines. For citizens, it greatly increased convenience related to criminal justice. As of the end of 2015, there have been around 100 million accumulated logins to the criminal justice portal, 22.25 million criminal case queries, and 2.76 million mobile app logins.

Government electronic HR management system

Implementation of the system to digitalize the personnel management system of civil servants started with the launching of the Central Personnel Committee formed for HR reformation in 1999. The PPSS (Personnel Policy Support System) was developed in three stages between 2000 and 2003, which integrated the whole HR process such as hiring, education and training, wages, benefits, and duties into one system and was distributed to all central ministries.

However, each ministries continued to manage its own personnel data separately. Therefore, the government integrated the PPSS of all separate ministries into a shared system in 2008 and distributed it to all central ministries by 2010. The system was named "e-Saram." The web version of e-Saram was completed and distributed to all agencies by 2012, and a mobile e-Saram service was launched in 2013.

Administrative information sharing service

People are required to submit documents such as a copy of their resident registration to government offices to receive various services. The process of having civil application documents issued had become much simpler with the establishment of e-Government services that provide them through the Internet. Although having documents issued through the Internet was much more convenient, the inconvenience of having to print them out for submission still existed. The government therefore

| Service Type | Expansion of Administrative Information Sharing Service | | | |
|--|---|--|----------|--|
| | 2005 ~ 2008 | 2009 ~ 2013 | | 2014 ~ 2016 |
| Document Queries | 34 types | 135 types | | 153 types |
| Information Distribution | - | Distribution of large volumes of information | 20 types | 1,879 types |
| | - | Real-time information distribution | 21 types | 207 types |
| | - | Confirmation of authenticity | 12 types | 21 types |
| Expansion of Sharing Agencies | Administrative agencies (312) | All administrative agencies | | All administrative agencies |
| | Public institutions (5) | Public institutions (100), Financial institutions (18), Educational institutions (7) | | Public institutions (141), Financial institutions (21), Educational institutions (174) |
| Electronic Petition Documentation Service | - | Civil Service Portal (8) | | Civil Service Portal (12) and 1,813 general administration information types |

launched a service that drastically reduced the documents needed for petitions and allowed civil servants to query or share information owned by administrative and public institution, through an administrative information sharing service. The e-Government Act on the Promotion of Electronic Activities such as Administrative Affairs for the Implementation of the e-Government enacted in June 2001 explicitly and broadly addressed this issue.

Through the administrative information sharing service, citizens no longer need to submit documents when requesting government services. Moreover, administrative work became more transparent, and document management costs went down. While working on improving the convenience of the people requesting such service through the civil service portal (G4C),

the government simultaneously put an effort in reducing the number of required documents through the administrative information sharing service. This information sharing service has become much more important in 2005, due to the raised possibility of forgery and alteration of the documents issued via the Internet.

The development of the administrative sharing system was carried out in three stages between 2005 and 2016. The first stage (Establishment of administrative information sharing service: 2005~2008) introduced the concept of an Administrative Information Sharing Center and expanded the scope of sharing to public agencies and financial institutions. The service was launched in 2007 to enable 317 administrative and public agencies to share 34 types of administrative

information. It also resolved citizen inconvenience in receiving and submitting documents and saved about KRW 210 billion annually from the decreased need to print paper documents. The second stage (Advancement of administrative information sharing service: 2009~2013) involved development of a user-customized sharing system. It introduced a “One-screen” service which was designed to save users from having to navigate the whole ledger, and instead provide only of needed information on one page. This also helped strengthen privacy. Moreover, it introduced an information distribution service which enabled users to save and reuse information instead of the existing read-only service. In 2010, 539 government agencies jointly used 92 types of administrative information, leading to savings of KRW 225.2 billion per year. The third stage (Establishment of hub for administrative information sharing service: 2014~2016) took a step towards becoming the national “Information Distribution Hub.” Beginning in 2015, the institutions sharing of administrative information were expanded to private sectors including nonmonetary institutions broadened from the original boundaries that were limited to government institutions, public agencies, and the banking sector. The system also evolved from sharing centered on information queries to service centered on information distribution. In 2016, 647 agencies used 389 million records of information, leading to savings of more than KRW 2 trillion per year.

3. Innovation of Services Delivered to Citizen

National safety management service

The collapse of the Sampoong Department Store in 1995 greatly increased awareness of the need for the management of safety at the national level. As such, the Korean government announced its “National Emergency Management Plan (1996~2004)”, but the National Disaster Management System (NDMS) project at the time failed to be implemented as planned due to a budget shortage. Although the National Disaster Management System was developed and distributed to central ministries and local governments, it remained at a level limited to building database on disaster information and could not function as an integrated national disaster management system to bring together the systems developed independently by individual agencies.

The National Safety Management System started anew after it was selected as one of the 31 e-Government roadmap projects. A government-wide disaster management network was implemented in 2004, and a new National Safety Management System was developed in 2006. The following year, the disaster management systems for the National Emergency Management Agency and municipal administrations were expanded. The government also developed an integrated interface to disaster imaging systems (CCTV) in 2009. However, these efforts failed to improve

people's sense of safety to any significant degree.

In June 2014 following the sinking of the Sewol Ferry, a government-wide integrated disaster and safety information system was developed to cope effectively with disasters and social crises. In 2015, 28 disaster management systems separately operated by different ministries, according to the types of disaster, were restructured into three portals (disaster management portal, mobile disaster management portal, and national disaster management portal). This restructuring enabled the agencies to share information that would expedite handling of disasters in the future. In 2016, the government developed a standardized system to broaden the sharing of information on disasters between the central government and the local governments. In 2017, it implemented an organic collaboration system to increase the capability for on-site response. It also developed a disaster prevention management system, which is presently being upgraded into an intelligent disaster management system.

Online architectural administration

Architectural administration has been the most typical multi-departmental administrative service which involved more than 90 pieces of legislation and regulations, more than 40 types of documents, design drawings, and more than 20 agencies. It usually had taken months and even years to complete the process from a request for architectural permission to construction and license approval. Moreover, the architectural licensing process was prone to various

irregularities such as illegal solicitations.

The Ministry of Construction and Transportation developed a standardized AIS (Architecture Information System) to digitize architectural administration services and distributed it nationwide between 1997 and 1999. It was based on the Housing and Building Information System developed by Eunpyeong-gu in 1994.

The architectural administration information system was also selected as one of 31 e-Government roadmap projects in 2004. The government redeveloped the existing system into one that was Internet-based, standardized the drawings, consulted with relevant agencies on the Internet, and improved the related legislation by 2007. The system was named "Seumteo." It greatly decreased the time and cost of storage, management, and distribution of drawings and reduced the time spent for the issuance of construction permits from 60 days to 7.5.

It also included a function allowing the civil petitioner to review the legality of the architectural permit, the cyber consultation system, and the linkage to the real estate registration system by 2011. Through this, the whole process of architecture approval was digitized. The government implemented the spatial information service and platform for building information modeling (BIM) in 2013 and the disclosure of architectural data to the private sector in 2016.

The system had processed about 1.2 million architectural approvals and issued more than 37 million building ledgers as of the end of 2016. The

system is also being used in establishing various architecture-related policies.

Integrated social welfare services

Computerization of social welfare in Korea began with local sanitation and health care and health/welfare administration as part of the Second National Backbone Network Project between 1992 and 1998. The project was executed according to the “Master Plan for Citizen Welfare Network” announced in 1994. However, since the demand for social welfare was not great at that time, it was implemented as a life protection management system as part of the local administration.

After the enactment of the National Basic Livelihood Security Act in 2000, local governments faced difficulties in acquiring and managing data on income and assets of potential recipients. Compared with the increase in welfare expenditures due to the increased demand for social welfare, the response rate stayed limited. As a result, the government selected the national welfare system as another one of the 31 e-Government roadmap projects and implemented it by 2006. The purpose of the national welfare information system was to increase the level of services through systematic management and sharing of welfare information and service histories kept by different agencies and providing it through a single window. However, demands to increase efficiency and transparency of welfare services have increased in the wake of reported problems with the selection of welfare recipients and abuse of the system. Work related to welfare

was transferred from the local administrative information system to the central government, which in turn began the Social Welfare Integration Network Project to manage recipients’ qualifications and their benefits in 2009. The system was launched with “Haengbok (happiness) e-Eum” as its name in 2010, consolidating 218 types of data on income and assets and welfare service history from 27 agencies and providing it to the local governments as needed. It also links the online aid billing between the social welfare facilities and municipalities and manages the individual benefits and service histories of each recipient. It ceases fraudulent benefit payments by checking related financial data such as bank accounts. In 2013, the Korean government launched “Pan-Government (Social security information system)” to share data on qualifications and receipt history of the welfare recipients among government agencies. An online portal (www.bokjiro.go.kr) was also opened to provide information such as integrated benefit management and management of counseling cases as part of its services customized for individual citizens.

As of the end of 2016, Haengbok e-eum (Social Security Information System) manages the qualification of welfare recipients and adequacy of welfare benefits according to income and assets using 797 items of data related to income, assets, personal information, qualification, receipt history, and processing from 61 agencies and the financial data acquired from 141 financial institutions. The system reduced the time needed to investigate the welfare beneficiaries’ wealth from 60 days to 14

days and helps prevent problems such as duplicate receipt of similar welfare services, leading to savings of around KRW 3.279 trillion. Based on these outcomes, the system received the first place in the UN PSA (Public Service Awards) in 2014.

Food and drug information service

In 2003, it became necessary to strengthen the system for food and drug safety and provide information related to citizens' health after the AI (avian influenza or bird flu) and BSE (bovine spongiform encephalopathy, or mad cow disease) crisis. The food and drug information service was selected as another of the 31 e-Government roadmap projects and its development occurred between 2004 and 2007. The system included food and drug services to citizens, an administrative portal, the sharing of information related to agriculture/livestock/fisheries, and an information service on food and agriculture/livestock/fishery safety. This made work such as notification and examination of imported food products more transparent and faster. Moreover, it established a safety management system for food and drugs, narcotics, and medical devices through the information sharing between relevant agencies. The food and drug information system is named KIFDA (Korea Internet Food & Drug Administration). In 2008, the government opened a food safety portal to provide information on agricultural/livestock/fishery products and processed food products.

The food and drug information service increased its administrative efficiency related to the quality

of food and drug services. Moreover, the system disclosed performance results of drug and medical device tests (increasing management of safety) and established a quick tracking system when food-related incidents occur. After a series of continuous enhancements, the system was opened to the public in 2014 allowing the private sector to utilize existing food safety information.

4. Innovation of Enterprise Support Services

Single window service for enterprise support

The Korean government selected "A Good Country to do Business" as a national agenda item to improve national competitiveness. The single window service for enterprise support (G4B: Government for Business) was designated as another one of the 31 e-Government roadmap projects. G4B was implemented in three stages between 2004 and 2008, offering one-stop services for various approvals, certificate issuance, and notifications needed for the whole business lifecycle, from establishment to closing, and provided information such as industry and import/export trends. Moreover, it integrated enterprise support with other services such as registration for qualification to bid in Nara Jangteo, issuance of local tax payment certificates, and payment of taxes.

The 'Enterprise Support Single Window Service

(G4B)' was launched in 2008 and provided business-related services and information through the G4B portal (www.g4b.go.kr). This worked to greatly simplify enterprise service procedures including reducing of the time needed for filing for incorporation from 17 to 7 days.

5. Innovation of Citizen Participation

Online citizen participation portal

The government needed services to meet the demands of the people today who ask for better communication between the people and their government and for the people who demand participation in government affairs. This resulted in online participation services to become another one of the 31 e-Government roadmap projects. An e-participation portal (www.epeople.go.kr) was set up from 2004 to 2007 as a single window for people to participate in policymaking and voice their difficulties and suggestions. The government service systems of seven agencies (including the Ministry of Construction and Transportation) that often received petitions from people were integrated into the first stage in 2004, while all central administrative agencies systems were integrated in 2005. In 2006, the portal was linked with local government service systems. The e-participation portal facilitated the receipt and processing of people's complaints and suggestions. In 2008, an e-participation request button was placed on all agency websites to minimize the impression of unfair administrative

schemes, prevent corruption by civil servants, and establish a "clean" public sector. The system was improved so that a suggestion or complaint gets registered automatically to the e-participation portal, and relevant agency must respond.

This facilitated the resolution of complaints without citizens having to visit an agency office. It also increased the quality of service by having cut the processing period from its original 36 days and reducing it to 6 days instead. In addition, administrative efficiency was improved by merging duplicate or repeated complaints. As a result, it was selected by the Top 10 Service by the World e-Government Contest held in France in 2006 and received the UN Public Service Award in 2011.

6. Innovation of Information Resource Management

Government Integrated Data Center

After the administrative network was built in the 1990s, agencies quickly increased their information resources such as servers. Moreover, the e-Government projects that began in the 2000s rapidly increased these resources, and management costs were predicted to increase, necessitating integration of these resources for better management. Most agencies, however, were opposed to the idea due to concerns that they would be controlled by other agencies.

The Korean government therefore selected “Innovation to Efficiently Manage the Government-wide Computing Environment” as one of the 11 key e-Government projects and established the BPR/ISP in 2004 to integrate its information resources. It had migrated the information systems of 20 central administrative agencies including the Ministry of Government Administration and Home Affairs and Korea Customs Service to the First Government Integrated Data Center in Daejeon by 2006. It had also migrated the information systems of 19 central administrative agencies such as the Ministry of Land, Transport and Maritime Affairs to the Second Government Integrated Data Center in Gwangju by 2007. The information systems of 47 agencies were migrated to two Government Integrated Data Centers by 2015. The physical migration of information systems in operation was very complex. A strategy was prepared to migrate key e-Government services such as the G4C without interruption, and carried out successfully.

The Government Integrated Data Center developed the NTOPS (National Total Operation System) and integrated the information systems of tenant agencies to manage them efficiently. The government also developed the Integrated Asset Management System to efficiently allocate the resources and prevent duplicated investment of information resources through the management of the entire process from registration to disposal of information assets. It also established a powerful integrated security management system to identify the risk of and vulnerabilities to hacking in advance.

Although the government completed the physical integration of information resources by 2007, there was no sharing of those resources. Although 70% of the servers had a utilization rate of less than 30%, there was no way to share the spare equipment with other agencies. This meant that no savings to the cost was being realized through the procuring of new equipment and information system. In response, the government developed an integrated information resource management system to allocate, collect, and redistribute these resources according to each agency’s requirements. Moreover, cloud computing technology was introduced in 2012 to facilitate this allocation and collection after use of these resources. In 2017, 740 government projects will be switched to utilize the cloud service.

Through the establishment and operation of the Government Integrated Data Centers, the monthly average system interruption time decreased from 67 minutes to 3.6 seconds, resulting in effective, uninterrupted e-Government services. Moreover, joint purchases, deployment, and operation of information resources required by all government agencies reduced purchasing costs and operation and maintenance costs by 30%. It is expected that, all told, there will be savings worth 40% of the annual budget when all projects are switched to cloud computing.

Introduction and application of Government-wide Enterprise Architecture

Continuous development of information systems by the government led to rapid increases in

information resources to operate them, and thus their size and complexity also increased. Moreover, the interoperability between hardware and software was made insufficient since several different information systems were constructed even within one institution. There were also problems of a lack of data standardization and of duplicate development of similar projects. These issues needed to be dealt with at the government-wide level.

The Korean government therefore adopted EA (Enterprise Architecture) as a tool for this job. The Act on Efficient Introduction and Operation of Information Systems was enacted in 2005, which mandated that public agencies adopt the EA, leading to a government-wide EA system in 2009. A government-wide EA portal (www.geap.go.kr) was set up to prevent duplicate investment on e-Government projects, to integrate and link the systems by government service, and to improve interoperability by sharing, analyzing, and utilizing the EA information developed by each agency.

As of the end of 2016, 18,434 information systems and more than 330,000 information resources operated by more than 1,200 public agencies were registered in the government-wide EA portal. Most public agencies use EA to check for duplication, ensure feasibility, and review technology in advance when implementing e-Government projects. This led to a total budget reduction of KRW 438.6 billion over the four years between 2009 and 2012. The government-wide EA portal was integrated with

the e-Government advance consultation system in 2014 for greater prevention of duplicate development of similar systems. In recognition of the outcomes of the government-wide EA, it received a UN Public Service in 2013.

Development and enforcement of e-Government Standard Framework

As development of the e-Government services has expanded, participation of large software development companies in the private sector has increased greatly. These companies began applying their development frameworks, including modularization and reuse of similar software parts and features, to improve productivity. This raised the problem of key national information systems being dependent on the framework of specific companies. This also became an entry barrier to the participation of smaller companies in e-Government projects and created dependency on specific companies for additional improvements and software maintenance.

To address this problem, the government began developing the “e-Government Standard Framework” in 2008, whose purpose was to develop in advance the platform environment and common components needed for software development and jointly utilize them on projects. Environments were thus created for the development, execution, operation, and management, as well as 229 common reusable components for the implementation and operation of e-Government services, and disclosed to the public free of charge.

Since its first disclosure in 2009, the e-Government Standard Framework had been downloaded more than 590,000 times by 2017 and had been used by 709 informatization projects (for a total value of KRW 1.7 trillion). The Framework is used widely by not only public agencies but also the private sector. As a result, it received the “Government Service Award of the Year” which was the top award at FutureGov Award 2010 and was named the best in three areas including government innovation and technology leadership. In 2011, it received the CMMI international certification, the international quality standard for software. Moreover, the e-Government Standard Framework was applied to 17 projects (total value of KRW 56.7 billion) in 9 countries in Europe, Asia, and Latin America.

the Internet. Subscribers can receive services at 100 Mbps by upgrading the exchange, transfer, and terminal devices using existing hybrid fiber-coaxial (HFC) or a high-speed Internet network.

The government announced its plans to construct a “Broadband IT Korea” in 2003 and began building a BcN nationwide in three stages from 2004 to 2010. As the number of leading BcN service IPTVs reached 5.4 million in 2012, they became the driving force for an increase in wired/wireless subscribers and proliferation of broadcasting/communication convergence services. The technology is continuously evolving as next-generation networks such as Giga Internet, broadband networks in rural areas, and IoT are being built. To narrow the network gaps between urban and rural areas and provide universal broadcasting/communication services, the Korean government is promoting the construction of a BcN in 13,217 rural villages between 2010 and 2017.

Section 6.

Overcoming the Limits of Time and Space

1. Establishment of the Broadband Convergence Network (BcN)

The Broadband convergence network (BcN) is the quality assured integrated network that can safely provide broadband multimedia services integrating communication, broadcasting, and

2. Establishment of Ubiquitous Work Environment

Construction of the Ubiquitous Public Service

In the mid-2000s, there was a craze to prepare a “ubiquitous society” where people and things were interconnected by networks mostly in developed countries such as the United States, facilitating communication that could take place anywhere

and at any time. The Korean government also identified the radio frequency identification and ubiquitous sensor network (RFID/USN) as a new engine for national growth and began fostering related industries. Moreover, it sought to resolve national issues by applying RFID/USN technologies to administrative projects such as management of emergencies, safety, welfare, and the environment. It carried out a variety of such pilot application projects in defense, procurement, agriculture, and safety management between 2004 and 2008. In addition, in 2009, it established the 'Ubiquitous-Based Public Service Revitalization Plan' and implemented projects for improving administrative efficiency and convenience of its services for the people by incorporating new technologies such as location-based technology and mobile technology as well as RFID/USN into the e-Government services.

The government invested about KRW 84.1 billion in 94 u-public service projects between 2008 and 2016. It reviewed the outcomes of these pilot projects and expanded the scope to all services to increase administrative efficiency. Examples include the property management system, where RFID tags were attached to various items such as computers, desks, and vehicles owned by the government in 2008. The system prevented mismanagement and reduced manual inventory time by more than seven-fold through electronic management from acquisition to disposal and inventory. It also measured food waste with sensors to reduce the cost spent on discards by 20%. RFID tags were attached to books owned by public libraries so that the people could check out and return books conveniently through an automated process.

Arguments for & against Smartwork

The proponents of smartwork argue that it improves the personal quality of life and helps to resolve the problems of child caring while working. They believe that smartwork reduces commuting time and enables management of schedules to eventually increase the time for self-development, leisure, and family.

According to a survey of office workers in 2009, 66.0% of respondents willing to participate in telecommuting selected "schedule management" as their reason.

On the other hand, opponents of smartwork believe it increases workload since the people have to be on standby 24/7/365. They say it is also likely to increase "emotional labor" due to the infringement of privacy and the decrease of leisure time. They argue that smartwork can lead only to focus on managerial efficiency instead of the original intention of building an environment in which people can demonstrate their individual abilities and creativity to the maximum.

The arguments for and against smartwork indicate that it is necessary to establish an appropriate culture by instituting measures that reflect the characteristics of work and organizational commitment since the costs of performance measurement and management may increase.

Smartwork to support work-family reconciliation

“Smartwork” refers to “flexible working” that enables people to work anywhere and at any time using information technology. Although there have been efforts to mobilize people out of fixed offices and onto the field, telecommuting from home or a smartwork center has not gained traction. In 2010, the government established a smartwork promotion strategy in the public sector and began building regional smartwork centers and amending legislation essential for its promotion.

Smartwork centers were set up near residential districts or transportation centers and an office environment provided such as the same network as conventional offices that enables people to work without having to commute to the office. Beginning with Dobong-gu and Bundang Centers, the government is now operating centers in main business districts and transportation hubs including eight locations in the capital region, four government buildings, the National Assembly, Seoul Station, and Express Bus Terminal. The government service and performance evaluation systems have been redesigned to promote flexible work system and improve the face-to-face centered organizational culture.

As a result, smartwork is spreading in the public and private sectors. In a survey of the public sector in 2015, 88.7% of respondents answered that they had experienced smartwork, and 89.3% recognized its necessity. The government is

seeking to spread the practice by establishing the institutional grounds, expanding infrastructure, and diffusing the culture.

Section 7. The Paradigm Shift in e-Government

1. Integration of e-Government and National Informatization

The administration that launched in 2008 dismantled the Ministry of Information and Communication, which was in charge of information and communication affairs, and transferred the function of national informatization to the Ministry of Public Administration and Security. As a result, national informatization and e-Government projects were integrated and carried out until 2013.

In 2008, the government announced its final Master Plan for National Informatization. This was a way to identify a future growth engine and realize an advanced knowledge information society based on creativity and trust through informatization. As a goal of national informatization, its objectives were to create “a competent knowledge-based government,”

“well-being of the people through digitization,” and “an information society based on trust”. It also organized the President’s Council on Informatization Strategies, made up of experts from the private and public sectors to oversee and coordinate related national policies. The Council announced 10 National Informatization Projects in 2010 to extend the reach of informatization throughout society including the educational, industrial, and healthcare arenas. The 10 projects included the construction of infrastructure to integrate national knowledge, the establishment of a foundation for low carbon green growth, cultivation of new IT industries, advancement of services through IT, construction of a next-generation information/communication infrastructure, advancement of the e-Government, strengthening of international cooperation in IT, building of a safe information society, establishment of a digital welfare environment, and strengthening of the information security system. They focused on social development through IT in accordance with the changes that IT had brought to the society at large.

2. Protecting Privacy

The basic condition of the e-Government is to accomplish a secure government trusted by the people. However, the government has to collect, analyze, and process personal information in order to realize that e-Government, and even share that personal information with other administrative agencies. During this process, the people may

have concerns about their personal information being exposed and becoming the target of surveillance and supervision by the government and become anxious that the information may leak. The government enacted the Act on the Protection of Personal Information Maintained by Public Institutions in 1994 to protect personal information on the administration network. However, the dispute over infringement of privacy during the development of National Education Information System in 2003 has become a social issue. With increasing awareness that privacy issues are not confined to the national and public sectors, the government has begun to consider establishing privacy laws that apply to both the public and private sectors.

The Personal Information Protection Act was enacted in March 2011 after an extensive review that began in 2003 and continued on till 2011. The Act mandates the consent of the subject of the information when collecting or using it or providing it to a third party, and also the disposal of that personal information without delay on completion of the intended use. It prohibits the processing of unique numbers such as the resident registration number without the individual’s consent or its use is stipulated in legislation. Moreover, it mandates notifying the person and taking measures to minimize any damage immediately upon realizing there has been a leak of personal information. The Personal Information Protection Act laid the groundwork to ending the general anxiety regarding privacy and implementing an e-Government trusted by the people.

CHAPTER

3

Aiming to Become a World-Class Intelligent Government

Section 1.

Leading the Korean Wave in the Field of Administration

1. Being Ranked Top in UN E-Government Survey for Three Consecutive Surveys

The UN E-Government Survey is an evaluation conducted by the UN Department of Economic and Social Affairs of over 190 United Nations member countries. The degree of e-Government development of each country is quantified and evaluated according to the e-Government development and online participation indexes. The purpose of the evaluation is to compare and assess member countries in order to share their experiences and expertise in establishing successful e-Government systems. First conducted in 2002, the survey was administered annually until 2005 and has been conducted every two years since 2008.

In the UN E-Government Survey, Korea was ranked at the top in 2010, 2012, and 2014, consecutively. In the 2010 evaluation, Korea was ranked first place for being both at the top of the e-Government development and online participation indices, resulting at overall top position. In particular, it was the only country that achieved perfect scores in terms of the “Web-

level” indicator, which measures the convenience and safety of e-Government services, and “E-Participation Index,” which indicates the ease with which citizens can participate in online policy making. In the 2012 evaluation, Korea ranked the highest in all areas, as it did in 2010, leading it to take the top position in the overall assessment. This achievement can be attributed to the successful establishment and implementation of the “Smart e-Government Master Plan,” which largely pursued the expansion of interactive channels for citizens, provision of services customized to people’s lifecycle stages, and implementation of measures for narrowing the digital divide in 2011. In the 2014 evaluation, Korea ranked first again in all categories, as in 2012, securing overall top place for the third consecutive time. These results showed that Korea’s efforts to provide customized services to its citizens and implement policies promoting openness and sharing of public information had been recognized by the international community.

Unfortunately, Korea was ranked third place in the 2016 evaluation. This is attributed to the sharp decrease in Korea’s human capital index, caused by the decline in university enrollment rates. In response, the government planned to strengthen its development strategies towards its e-Government by establishing the “2020 Master Plan for e-Government” in 2016, aiming to grow rapidly as an administrative powerhouse that leads the global dissemination of the e-Government.

The international community has recognized

Korea's e-Government system as the best in the world, with four international organizations and 42 countries having signed 49 MOUs this year to secure the cooperation of the Korean government in establishing their own e-Government systems. Up until 2016, only six such MOUs had been signed. The demand of foreign governments for Korea to share its e-Government development experience and best practices has increased as well. Accordingly, the Korean government is initiating the expansion of its e-Government system on the global stage by inviting and training government representatives from developing countries, providing consultations for foreign governments, establishing and operating an e-Government cooperation center in each region, and hosting forums and seminars on e-Government cooperation. Of particular note, in 2014, it created the Digital-5 Ministerial Conference, a ministerial-level consultative group composed of the representatives of leading countries (Korea, UK, New Zealand, Estonia, and Israel) in terms of the operation of the e-Government systems, and hosted the 3rd Digital-5 Ministerial Conference with the aim of leading the global penetration of e-Government systems.

2. Accomplishing e-Government system exports valued at USD 500 million

The Korean government has continued to pursue various relevant projects in order to

support the export of its e-Government system. Its key projects have been the establishment and operation of an e-Government cooperation center, building of international cooperation for the operation of e-Government systems, establishment of cooperation with international organizations in the field of informatization, improvement of developing countries' capacity to use information, and the dispatch of the World Friends IT Volunteers. Through these activities, 500 Korean ICT companies earned a remarkable amount of USD 534.04 million through e-Government system exports in 2015.

Korean e-Government exports have involved not only selling the systems used by our government to foreign governments, but also providing comprehensive cooperation and support at the government level, including its experience and expertise in the operation of the e-Government systems. In terms of Korean e-Government exports by region, Asia accounted for 38.5%; the Commonwealth of Independent States (CIS), 28.5%; and Africa, 26.7%. Security products, such as CCTV systems and digital investigation programs, accounted for the largest share of exports (24%), followed by electric power systems such as intelligent remote meter systems (23%) and transportation systems (19%). Traditional export products, such as procurement systems and patent systems, have also been exported to many countries.

The increase in e-Government exports has significantly helped capable domestic mid-sized and large IT companies advance into

overseas markets. This works to contribute to the development of the domestic software industry, enhancement of the technological prowess of Korean small and medium sized enterprises, and the creation of software-related jobs.

3. Shift to Citizen-Centered Government Operation

Role of e-Government in the era of Government3.0

The new government launched in 2013 set forth “Government3.0” as a new paradigm for government operations. Government3.0 was a strategy designed to establish a transparent and competent government that would disclose and share public information with the people and innovate government work processes through cooperation and communication between ministries. It also sought to create a service-oriented government by expanding the provision of customized services to the public.

To achieve these goals, the government organized the Government3.0 Promotion Committee in 2014 and established the “Government3.0 Development Plan.” This plan included the goal of realizing a transparent, competent, and service-oriented government and set forth eight key tasks toward that end, and e-Government was the means by which it sought to achieve those goals.

Beneficiary-customized services

During the Government3.0 period, the e-Government focused on understanding what services the public wants to receive, removing the boundaries between relevant ministries, and providing personalized services to individual citizens. In 2014, a pilot project was initiated, and in 2015, services customized to the lifecycle of citizens were extended to 10 more administrative areas: birth, marriage, death, infancy, education, knowledge, employment, and real estate. By integrating the tasks of numerous ministries, such efforts have allowed citizens to receive all services through a single window and ensured that each applicant receives the desired administrative service at once.

In 2016, the government combined its portal site and civil affairs service site (minwon.go.kr) to lay the groundwork for building an integrated platform that enables all aspects of administrative service, including guidance, application, processing status check, and result confirmation, to be done at one service window. Since then, the government has been conducting the trial operation of the “Government24” service by additionally integrating the “e-notice” site, which brings together all public welfare services that had previously been handled by each government organization separately, to provide customized services to the public. In addition, a pilot service was launched that transforms the existing system of public administration from a system that provides services only upon request or report of citizens into a system that preemptively provides

necessary services to the public in advance, even without any request having been made.

Collaboration with the public through opening up government data

In 2013, the government enacted the Act on the Promotion of the Provision and Use of Open Data, which was intended to lead the disclosure of open data held by all public institutions. With this measure, the government began pursuing the disclosure of open data for use by the private sector. In 2015, open data was made available to the public through the open data portal (www.data.go.kr), and the number of requests for data increased by about three times compared to 2013. In addition, the number of cases in which open data was used or applied increased by approximately 56 times, and the number of new services developed based on open data increased by 16 times. Since 2016, the government has been expanding the disclosure of core data with high levels of demand from both the public and private sectors. It is also providing high-quality data in an open API format, allowing it to be used without any additional processing. The private sector is developing various creative and novel services based on these open data that have been made available.

Section 2.

Application of Advanced Technology to e-Government

1. Adoption and application of new technologies

Era of the Internet of Things (IoT)

In the 2000s, the era of the “Internet of Things” was opened, as machines became capable of actively communicating with other machines. Since then, communication technologies have evolved to the level where wired and wireless sensors are able to collect and share information and communicate with each other directly. New intelligent convergence-based services, such as augmented reality, based on information acquired through the integration of services or media are now slowly emerging, though they are still in the early stages of development.

In October 2009, the Korea Communications Committee announced the “Master Plan to Establish a Foundation for IoT,” which was developed to establish ICT infrastructure for the future convergence of media and communications. The plan aimed to build a foundation for the convenient and safe use of intelligent services based on human-to-machine communication and machine-to-machine communication, unrestrained by the limitations of time and

Internet of Things (IoT)

The Internet of Things (IoT) is an intelligent networking technology and environment in which machines are connected to a wired or wireless network so that they may organically collect and share information and interact with each other. It connects physical machines to the virtual world through networks, making it possible for humans to communicate with machines and machines to communicate with other machines in an environment unrestrained by time or location.

Gartner has estimated that the number of IoT-enabled devices will grow from 4.9 billion units in 2015 to 25 billion units in 2020, and expects related service and product outputs to reach USD 300 billion by 2020.

IoT services are expanding into the areas of public safety and distribution through conversion and integration with various industries. In addition to the existing health care and smart energy fields, IoT technology is expected to be applied to intelligent transport services, social infrastructure such as buildings and bridges, and remote management services.

space. In particular, the Committee focused on technology standardization at home and abroad and the improvement of legal frames for the development of core machine-to-machine communication technologies by discovering leading service models in the public sector. In 2010, the Committee included machine-to-machine technology among the 10 core future service areas in the field of media and communications. In 2011, it added IoT to the target list of the “Strategies for Nurturing Seven New Smart Industries.” In June 2013, the Ministry of Science, ICT and Future Planning selected IoT as the main target of technological development in these new industries and announced a midium to long-term development plan, called the “New Internet Industry Promotion Plan.” This plan was aimed to nurture and expand creative, Internet-related companies and new markets and identify leading businesses capable of creating new jobs

in order to strengthen the competitiveness of businesses and support their advance into overseas markets. In May 2014, the government announced the “IoT Master Plan to Become a Leader of the Hyper-Connected Digital Revolution,” with the goal of allowing citizens, enterprises, and the government to develop and use the world’s best active IoT services. In 2015, the government again publicly disclosed its strategy to expand the use and application of IoT technology, suggesting seven priority target areas in the public sector: agriculture, livestock, marine products, and food; manufacturing plants and distribution infrastructure; transportation and logistics; medical and welfare services; cultural tourism and education; energy and the environment; and smart homes and smart cities.

Creation of Cloud computing environment

With the rapid penetration and expansion of the Internet since 2000s, various cloud computing services have been developed, allowing users to borrow various IT resources such as software, platforms, and infrastructure remotely, without having to directly purchase and install them. Instead of installing additional software onto their personal computers, users can access Web-based software through them, while service providers can borrow resources through the Internet without having to deploy and operate their own servers.

In 2009, the government announced the “Master Plan for Vitalizing Cloud Computing,” which aimed to introduce cloud computing technology in order to realize eco-friendly IT technology and reduce costs. Although the plan failed to materialize, it provided a blueprint for the development of the domestic cloud computing industry. In 2013, the government established the “Government3.0 Cloud Promotion Plan,” which was designed to promote the use of cloud computing as a key drive of the implementation of Government3.0. In 2016, the government

established an official cloud computing infrastructure to facilitate simultaneous access by multiple bodies, automated capacity control, and integrated account management. The government has also been building a cloud repository to give users free and open access to its administrative data and working to change the electronic approval system into a cloud-based one. In addition, it distributed mobile terminals dedicated to administrative tasks to provide local community-based administrative services. Furthermore, the National Computing and Information Service is being transformed into cloud-based computing (G-cloud).

In 2015, the government enacted the “Act on the Development of Cloud Computing and Protection of its Users” in an effort to apply cloud computing technologies to administrative services. In November 2015, the government set up and implemented the “First Master plan for Cloud Computing Development (2016-2018),” based on efforts that have been made to expand the use of cloud computing in the public and private sectors as a means of reducing costs, reforming work processes, and strengthening the competitiveness of the domestic cloud computing industry.

Cloud Services

Cloud computing refers to the lending of software, platforms, and infrastructure, freeing users from having to install and operate such services directly. As cloud computing reduces electricity use and costs and ensures flexibility in the supply of computing resources, many private and public institutions are now adopting it.

The World's First Enactment of Cloud Computing Legislation

The Korean government enacted the “Act on the Development of Cloud Computing and Protection of its Users,” the first legislation of its kind in the world, and enforced it in September 2015.

According to the law, the government, municipalities, and public institutions are required to make efforts to introduce cloud computing into their administrative systems and place priority on the introduction of cloud computing in relation to the development of informatization projects and budget allocation. In addition, the government is taking steps to vitalize the private cloud computing industry by encouraging public institutions to use the cloud services offered by private enterprises and integrate cloud computing technologies into the government-wide master administration plan.

Laying the groundwork for the collection and wide-scale use of big data

The concept and use of big data began to be applied to Korea's e-Government system when the Ministry of Interior and Safety reported to the president on a “Plan to Implement Smart Government Using Big Data” in November 2011. Later, in April 2012, the government opened the Big Data Strategy Research Center under the National Information Society Agency. In the same year, the Public Information Sharing Center embarked on a pilot research project to investigate the applicability of big data by amalgamating data from social network services (SNS) and open data. The research project showed that the use of big data could generate significant benefits. In July 2013, the government launched the first ever “Project to Establish Common Infrastructure for the Use of Big Data and Launch a Pilot Project.” Conducted in 2014, this project executed a

series of tasks, including the sophistication of the existing big data platform and storage and accumulation of big data for shared use, as well as 11 occasional analytical tasks. In particular, a high-capacity data storage system was built in such a way that various types of information, such as population movement, toxic substance of medicine, weather, and traffic volume information, can be accessed and used by various parties. Also, the collection of social media data in the private sector has increased dramatically, and data produced through simple statistical analysis, including spatial information-based analysis and on-line analytical processing (OLAP) analysis, have been added for real-time retrieval. By way of using the common big data infrastructure, central ministries and local governments now have the capability to analyze urgent social issues at any time. In addition, the launch of new pilot services has made it possible to provide various analysis-based services, including fire forecasting, smart

Big Data

Big data refers to structured or unstructured data that are too large to be collected, stored, and analyzed using existing methods and tools. The three defining properties of big data are volume, velocity, and variety. Volume refers to the amount of data, which is typically as large as tens of terabytes or dozens of petabytes or more, while velocity refers to the speed at which data processing can be carried out. In an environment where technologies are mixed and converged, digital data is produced at very high speeds, so velocity is important in terms of storage, distribution, collection, and analysis of big data on a real-time basis. Variety refers to the number of types of big data, which can usually be classified as structured, semi-structured, and unstructured data, depending on the type of structure. The analysis of this big data collection has the potential to create various new benefits.

disaster/safety alerts, drug side effect information, personal information protection, and road risk forecasting.

Development of Mobile Government Services

With the surge in the number of smartphone users in Korea since 2010, people have quickly shifted from computer-based services to the new mobile communication tools and information search platforms. As a means to meet this change, in 2010, the government implemented the “Master Plan for Mobile Government for the Realization of an Advanced Administrative State” in order to satisfy the demand for mobile administrative services and improve its communication with the public. In August 2011, as part of its “Plan for Mobile Service Informatization Strategies for a Smart Government,” the government drew up the “Mid-to-Long-Term Promotion Plan for Mobile

Government Service” with the aim of realizing the world’s best smart government. This plan listed 917 administrative services to which mobile services could be applied and built a common mobile infrastructure to be shared by the central ministries and local governments in providing administrative services through mobile platforms. The common mobile infrastructure is the solution to the security problem caused by connecting physically separated internal administrative networks and systems with external mobile devices.

Through such efforts, the government developed a mobile vehicle detaining system, parking monitoring system, fire engine control system, and population census system, as well as its mobile on-nara (Business Process System) and mobile e-people (Personnel Policy Support System) systems for internal processes, in order to help workers in the field carry out their respective

Smartphones and the Innovation of Administrative Services

- Including citizens as part of the administrative service process -

With the wide penetration of smartphones into all aspects of our everyday lives, citizens can now submit to the government any complaints or opinions they may have quickly and easily and participate in policymaking and decision-making processes through telephone calls, text messages, social media channels, or the e-participation portal (www.epeople.go.kr). This recent trend suggests the possibility of the public becoming part of the government's administrative service process.

For instance, when citizens become aware of emergency situations in their everyday lives, they can report such situations to the administrative office using the GPS capabilities of their smartphones. Public officials can then make prompt responses using real-time location tracking services.

While the government is striving to work closer with the people by expanding the administrative process using information technologies, such as IoT, the people are doing the same by participating in the administrative process using their smartphones.

tasks quickly and efficiently using mobile devices. Including the 14 types of administrative services launched in 2011, a total of 100 types of mobile administrative services, including 30 for internal processes and 70 for on-site administration were implemented as of 2015. In addition, the various e-Government services of each ministry are being released via mobile platforms. However, due to the rushed competitive development and operation of these mobile services by each government agency, many of such services were left unused or overlapped with others offered by private developers. Hence, in 2014, the government conducted a survey and abolished 642 mobile applications that were largely unused and unmanaged for a long period of time.

2. Designing the Next Generation e-Government

Master Plan for e-Government 2020

In 2016, the government established the “Master Plan for e-Government 2020” (2016 to 2020) to apply intelligent information technology to its e-Government systems, in line with the rapidly changing ICT environment. Particularly, the master plan proposed a new paradigm for the Fourth Industrial Revolution and a more responsive e-Government agenda. In April 2016, the e-Government Promotion Committee was organized to deliberate on and confirm the Master

Plan for e-Government 2020.

The Master Plan for e-Government 2020 has three major characteristics. First, the basic direction of the e-Government 2020 is oriented toward using intelligent information technologies (AI, IoT, cloud computing, big data, and mobile) as the key instruments of government operation. Its goal is to expand private and public partnerships to include politics, society, and government administration fields. Second, the existing administrative services should be transformed into more integrated and customized services that reflect the needs and complexity of each individual citizen. Third, e-Government 2020 should contribute to social development based not only on government reform but also on a new ecosystem where the government, businesses, civil groups, and individual citizens are able to cooperate with each other. In addition, the plan includes three key goals: delivering and realizing services catering to public demands, establishing an advanced & intelligent information-based administration, and creating a sustainable “digital new deal” under its slogan “Enjoy your e-Government!”

To realize the vision and goals of e-Government 2020, five strategies were suggested: re-designing of government services, achieving cognition and prediction-based intelligent administration, creating a new e-Government ecosystem that co-exists with industries, expanding trust-based & future-oriented infrastructure, and taking the lead in the global e-Government order.

The government drew up the “Action Plan for e-Government 2020” to give substance to the government’s master plan. The plan was created by taking into account the opinions of central ministries, local governments, and private experts and was confirmed following a review by the e-Government Promotion Committee. For the five strategies, the government selected 12 major initiatives and 30 core projects that is believed to receive particular attention in terms of their feasibility, importance, and urgency.

If the action plan for e-Government 2020 is carried out as intended, citizens will be able to gain access to and use all personalized services with a single verification process. In addition, they will be able to receive all civil affairs and information services online through optimized mobile platforms as well as offline at the administration offices. The establishment of a new, stable ecosystem for the e-Government is also expected to create new jobs, maximize value added for businesses, and strengthen global competitiveness through e-Government exports and market diversification. Last but not least, the government will be able to develop the best policies and implement measures for urgent social issues in a timely fashion based on intelligent information. Complete information sharing, information resource management, and utilization optimization is expected to be achieved through cloud computing of all information resources.

Key Contents of e-Government 2020 Action Plan

| Top 5 Strategies | 12 Major Initiatives | 30 Core Projects |
|---|---|---|
| <p>Re-designing of government services</p> | <ol style="list-style-type: none"> 1. Implementation of the “All-Digital” civil administration services 2. Establishment of the mobile-ready e-Government services 3. Implementation of the on-demand public services based on intelligent information (aka Me Gov.) 4. Building of the Open DIYard of the people | <ol style="list-style-type: none"> 1. Establishment of an integrated support system for safe real estate transaction 2. Building of a shared use system of immigration information 3. Establishment of a comprehensive support system for consumer damage relief, etc. 4. Construction of a next-generation new Mobile Government service 5. Integrated provision of personalized administrative services 6. Expansion of social security information system services 7. Construction of a portal with comprehensive employment information and related information 8. Establishment of a public-private collaboration platform for public-led public service development 9. Expanded application of the cloud software based on PaaS |
| <p>Achieving cognition and prediction-based intelligent administration</p> | <ol style="list-style-type: none"> 5. Establishment of an intelligent decision making system based on intelligent information 6. Building of a mobile and cloud-based unified public administration through cross-department collaboration 7. Construction of the foundation for a “Data-centric Government” | <ol style="list-style-type: none"> 10. Construction of a query-response curation system based on intelligent administrative big data 11. Building and spreading of the foundation for utilizing civil petition big data in policy 12. Construction of a big data integrated information system of traffic cards 13. Establishment of a national money laundering risk assessment system 14. Establishment of a the government-wide administrative collaboration and knowledge management system 15. Establishment of the advanced utilization base of government knowledge sharing 16. Improvement of the national data management system 17. Establishment of a government-wide information distribution hub for the expansion of administrative information sharing |

| Top 5 Strategies | 12 Major Initiatives | 30 Core Projects |
|--|---|---|
| <p>Creating a new e-Government ecosystem that co-exists with industries</p> | <p>8. Development and spreading of new e-Government services based on intelligent information</p> | <p>18. expansion and discovery of u-service model 19. Promotion of ICT-based public services</p> |
| <p>Expanding trust-based & future-oriented infrastructure</p> | <p>9. Strengthening of the preemptive information security 10. Strengthening of the cloud-based administrative information infrastructure 11. Expansion of the implementation of scientific social safety network</p> | <p>20. Construction of an intelligent-based machine learning security system 21. Establishment of an e-Government certification framework 22. Integration of cloud-based government information resources 23. Establishment of the 3rd Government Integrated Computing Center 24. Building of infrastructure for a national convergence network 25. Establishment of an integrated emergency hotline system 26. Implementation of an Integrated disaster and safety control system 27. Establishment of an integrated system for safety information on living environment 28. Construction of a social safety service based on circumstantial awareness</p> |
| <p>Taking the lead in global e-Government order</p> | <p>12. Expansion of the e-Government overseas export and international cooperation</p> | <p>29. Establishment of the project supporting the e-Government overseas expansion 30. Expansion of the e-Government Support Centers by region</p> |

APPENDIX



**e-Government
History
1967 -2017**



**1960s
AND
1970s**

In June 1967, at a time when all government tasks were conducted manually, the Economic Planning Board introduced IBM 1401 to compile census statistics, officially ushering in the era of electronic administration.

- 1967 Introduction of IBM 1401 for the completion of census statistics
- 1975 Master Plan for the Computerization of Administration announced by the Ministry of Government Administration
- 1975 Organization of Committee for the Promotion of Computerization of Administration
- 1978 Establishment of the First Five-Year Master Plan for the Computerization of Administration
- 1979 Enactment of Guidelines for the Computerization of Administration



1980s

Computerized systems for basic administrative tasks were established to enhance the work efficiency of government agencies and their affiliated organizations.

- 1982 Establishment of the Second Five-Year Master Plan for the Computerization of Administration
- 1984 Establishment of the Master Plan for the National Basic Information System (NBIS)
- 1984 Organization of the NBIS Steering Committee
- 1986 Enactment of the Act on the Promotion of the Utilization of Information and Communication Networks
- 1987 Establishment of the National Computerization Agency
- 1987 Implementation of the First Stage of the NBIS Project (1987-1991)
- 1987 Establishment of the Master Plan for the National Administrative Information System
- 1988 Establishment of the Master Plan for the Financial Information System
- 1988 Establishment of the Master Plan for the Education and Research Information System



1990s

During this time, the construction of the Five NBIS Networks was completed, the information super highway was built, and the full implementation of electronic administration began in earnest.



- 1992 Implementation of the Second Stage of the NBIS Project (1992-1996)
- 1992 Implementation of the Second Project for the National Administrative Information System (1992-1996)
- 1994 Organization of the Ministry of Information and Communication
- 1995 Enactment of the Act on Promoting Informatization
- 1995 Establishment of a comprehensive plan for constructing an information super highway and the implementation of relevant projects
- 1996 Establishment of the Master Plan for Promoting Informatization
- 1996 Establishment of the Plan for the Implementation of Administration Informatization (1996-2000)
- 1998 Launch of the Ministry of Government Administration and Home Affairs
- 1998 Enactment of the Regulations on Sharing Administrative Information
- 1998 Report of the Plan for Establishing Electronic Government to the President
- 1998 Establishment of the Master Plan for Activating Electronic Approval and Electronic Document Distribution
- 1999 Enactment of the Digital Signature Act
- 1999 Enactment of the Framework Act on Electronic Documents and Transactions
- 1999 Notification among administration agencies of the Standard for Electronic Document Distribution



2000s

The e-Government Act, the first of its kind worldwide, was enacted along with the launch of online civil affair services as part of the government's efforts to innovate an electronic administration system to enhance the convenience of the public and lay the groundwork for e-Government.

- 2000 Beginning of electronic document distribution between administrative agencies
- 2001 Organization of the Special Committee for e-Government
- 2001 Enactment of the e-Government Act
- 2001 Selection of the 11 Priority e-Government Initiatives
- 2001 Implementation of projects to support e-Government (2001-present)
- 2002 Launch of the Government for Citizens (G4C) portal
- 2003 Establishment of the Committee Dedicated to e-Government
- 2003 Announcement of the Plan for Establishing Broadband IT Korea
- 2003 Announcement of the 31 e-Government Roadmap
- 2004 Promotion of the construction of the Broadband Convergence Network (2004-2010)
- 2005 Establishment of the Committee for Promoting the shared Use of Administration Information
- 2005 Establishment of the Government Integrated Data Center in Daejeon
- 2005 Legislation for Government-wide Enterprise Architecture
- 2005 Completed construction of the Korea Information Infrastructure (Information Super Highway)
- 2008 Determination of the Master Plan for Promoting National Informatization
- 2008 Implementation of Projects for Promoting Ubiquitous Public Services (2008-present)

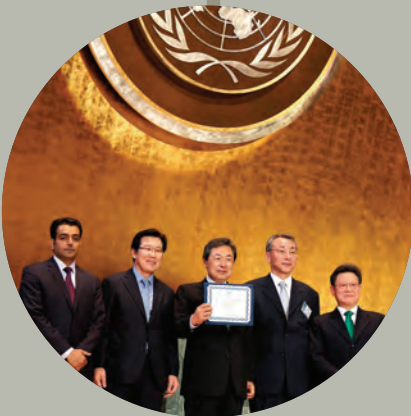


- 2009 Establishment of the Plan for Activating Ubiquitous Public Services
- 2009 Enforcement of the Framework Act on National Informatization
- 2009 Disclosure of the Standard Framework for e-Government
- 2009 Organization of the National Informatization Strategy Committee
- 2009 Announcement of the Comprehensive Plan for the Active Use of Cloud-Computing
- 2009 Launch of the Government Network Service (GNS)
- 2009 Promotion of the project for the construction of Giga Internet infrastructure

2010s

The e-Government of Korea was ranked three consecutive times as the top electronic government in the world, according to an evaluation by the UN. As various sub-systems of Korean e-Government are exported to countries overseas, and Korea continues to lead the e-Government trend worldwide.

- 2010 Confirmation and promotion of the 10 Tasks for National Informatization
- 2010 Promotion of projects for the construction of broadband convergence networks in rural areas
- 2010 Korean e-Government ranked first in the UN E-Government Survey
- 2010 Establishment of the Master Plan for Mobile Government
- 2011 Establishment of the Plan for Promoting Smart e-Government (2011-2015)
- 2011 Enactment of the Personal Information Protection Act
- 2012 Korean e-Government ranked first in the UN E-Government Survey for the second consecutive time





- 2013 Establishment of the Master Plan for Government3.0
- 2013 Enactment of the Act on the Promotion of the Provision and Use of Public Data
- 2014 Launch of the Committee for Promoting Government3.0
- 2014 Establishment of the Plan for the Development of Government3.0



- 2014 Korean e-Government ranked first in the UN E-Government Survey for the third consecutive time
- 2015 Enactment of the Act on the Development of Cloud Computing and the Protection of Its Users
- 2015 Establishment of the First Master Plan for the Development of Cloud Computing (2016-2018)
- 2015 Export of e-Government systems totaling USD 500 million
- 2016 Establishment of the Master Plan for e-Government 2020
- 2016 Provision of Government24 pilot services



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Published in October 2017

Publisher

Kim Boo Kyum
Minister of the Interior and Safety

Published by

Ministry of the Interior and Safety
209 Sejong-daero(Sejong-ro), Jongno-gu, Seoul,
Republic of Korea
82-2-2100-3399
www.mois.go.kr

ISBN 979-11-6212-004-0

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Korean
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the Interior and Safety

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