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2011 Modularization of Korea's Development Experience:

The Introduction of e-Government in Korea

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MINISTRY OF PUBLIC ADMINISTRATION AND SECURITY

The Korean Association for Policy Studies

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The Introduction of e-Government in Korea

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Preface

The study of Korea's economic and social transformation offers a unique opportunity to better understand the factors that drive development. Within one generation, Korea had transformed itself from a poor agrarian society to a modern industrial nation, a feat never seen before. What makes Korea's experience so unique is that its rapid economic development was relatively broad-based, meaning that the fruits of Korea's rapid growth were shared by many. The challenge of course is unlocking the secrets behind Korea's rapid and broad-based development, which can offer invaluable insights and lessons and knowledge that can be shared with the rest of the international community.

Recognizing this, the Korean Ministry of Strategy and Finance (MOSF) and the Korea Development Institute (KDI) launched the Knowledge Sharing Program (KSP) in 2004 to share Korea's development experience and to assist its developing country partners. The body of work presented in this volume is part of a greater initiative launched in 2007 to systemically research and document Korea's development experience and to deliver standardized content as case studies. The goal of this undertaking is to offer a deeper and wider understanding of Korea's development experience with the hope that Korea's past can offer lessons for developing countries in search of sustainable and broad-based development. This is a continuation of a multi-year undertaking to study and document Korea's development experience, and it builds on the 20 case studies completed in 2010. Here, we present 40 new studies that explore various development-oriented themes such as industrialization, energy, human capital development, government administration, Information and Communication Technology (ICT), agricultural development, land development and environment.

In presenting these new studies, I would like to take this opportunity to express my gratitude to all those involved in this great undertaking. It was through their hard work and commitment that made this possible. Foremost, I would like to thank the Ministry of Strategy and Finance for their encouragement and full support of this project. I especially would like to thank the KSP Executive Committee, composed of related ministries/departments, and the various Korean research institutes, for their involvement and the invaluable role they played in bringing this project together. I would also like to thank all the former public officials and senior practitioners for lending their time and keen insights and expertise in preparation of the case studies.

Indeed, the successful completion of the case studies was made possible by the dedication of the researchers from the public sector and academia involved in conducting the studies, which I believe will go a long way in advancing knowledge on not only Korea's own development but also development in general. Lastly, I would like to express my gratitude to Professor Joon-Kyung Kim for his stewardship of this enterprise, and to his team including Professor Jin Park at the KDI School of Public Policy and Management, for their hard work and dedication in successfully managing and completing this project.

As always, the views and opinions expressed by the authors in the body of work presented here do not necessary represent those of KDI School of Public Policy and Management.

May 2012

Oh-Seok Hyun

President

KDI School of Public Policy and Management

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Summary

e-Government is the application of IT tools and techniques (such as wide area networks, the Internet, and mobile computing) to provide governmental services for citizens, businesses and other governmental agencies efficiently (Seifert, 2003). e-Government can make it easier for citizens to access public information and services and can promote governmental efficiency, effectiveness, transparency and accountability, administrative convenience, accessibility of government and potential for participation.

In the first chapter, the current status of the Korean e-Government is briefly introduced. Korea is one of the top-ranked countries in terms of major international e-Government and IT indexes. Korea has steadily been at the first rank in the Digital Opportunity Index (DOI) of the International Telecommunication Union (ITU) since 2004, and has been within the top five countries in the UN e-Government Readiness Index[1] since 2005. Moreover, Korea has been among the top three countries several times in each IT competitiveness index of the Economist Intelligence Unit (EIU) in U.K. and the National Information society Agency (NIA) in Korea since 2005. However, it should be recognized that the superiority of the Korean e-Government is not merely the result of ICT infrastructure development.

In the latter half of the first chapter, the history of the Korean e-Government changes is briefly introduced according to each developmental stage. The developmental history and the stages of the Korean e-Government can be classified by the goal and content of the e-Government policies pursued (MOPAS, 2008) or by the level of IT technology and the

1 The e-Government Readiness Index is announced through the Global e-Government Readiness Report by the UN DESA (United Nations Department of Economic and Social Affairs) and ASPA (American Society for Public Administration) jointly at the end of every year. This index consists of three sub-indexes: Web Measurement Index, Telecom Infra Index and Human Capital Index, which are measured from the 192 member nations of the UN. First, the Web Measurement Index indicates the general ability of a government to provide public service. Second, the Telecom Infra Index presents the level of the basic infrastructure of ICT which is a preceding condition of e-Government. Third, the Human Capital Index refers to the general intellectual capacity of citizens to utilize e-Government.

area of application of the information technology (Kim&Oh, 2001). In the book, the history of Korean e-Government is classified into four stages: the introductory stage, foundation establishment stage, full promotion stage and advanced stage because the level of IT technology has been advanced and the applicable area has been expanded by the active governmental policies.

The second chapter deals with the introductory stage (1978~1987) of Korean e-Government (1983~1986). In this period, the government partly introduced computers for the task of survey and statistics. After a demonstration of the computerization of budgeting task in the Economic Planning Board to President Park, Chung-hee, he directed the administrative computerization. Thereby, the Administrative Computerization Committee was organized and the first and second Basic Plans of Administrative Computerization (1978~1982, 1983~1986) were formulated and implemented. However, a pan governmental e-Government project led by a stronger organization was required because the administrative computerization project was limited to adopt a few computing equipment in each governmental agency. For this reason, the Act on Establishment and Utilization of Network (Computing Network Act) was enacted in 1986 to improve efficiency in public sector and established the foundation for information industry development. The National Basic Computing Network Project Plan was formulated from 1983 to 1987 based on the Computing Network Act.

In the third chapter, the foundation establishment stage (1987~1996) is discussed. In this period, the first National Basic Computing Network Project Plan (1987~1991) was pushed and the computerization project was implemented in five areas such as administration, finance, education/research, national defense and public security. The computerization in the administration area included the six tasks such as resident registration, real estate, employment, customs, automobile, and economic statistics. In this period, the Computing Network Steering Committee formulated and coordinated the e-Government policy and the National Computerization Agency (NCA) implemented it based on the Computing Network Act. To secure financial resource, the Invest first and settle later strategy which was unprecedented was used.

In the last part of the foundation establishment stage, the second National Basic Computing Network Project Plan (1992~1996) was implemented to supplement the first plan and to connect the computing system for sharing the administration information among governmental agencies. The Informatization Promotion Fund was established in 1993 and the Ministry of Information and Communication (MIC) was established in 1994. Thanks to the two projects, the tasks of welfare, postal service, sea-goods, intellectual property information management, weather information management, procurement item list management, and fishing vessel management could be computerized and the administrative information network was launched in 1993.

The fourth chapter covers the full promotion stage (1996~2002). In the early part of

this period, e-Government was pursued in the framework of national informatization. The first National Informatization Promotion Master Plan (1996~1998) was formulated in 1996 based on the Framework Act on Informatization Promotion which was enacted to informatize the national society in 1995. The Informatization Promotion Committee formulated and coordinated the informatization policy, and the MIC and the NCA implemented it. However, in the latter part of this period, the e-Government was pushed apart from the national informatization policy. The e-Government Special Committee was organized in January 2001 and established and implemented the First e-Government Plan (2001~2002). In this period, internet and mobile-phone were broadly diffused, the information sharing and the system connection among governmental agencies were started, and the two-way information sharing between the government and the citizen began. As a result, the e-Government based on PC and the internet was established.

In the fifth chapter, the advanced stage (2003~2012) is discussed. In this period, the Second e-Government Plan (2003~2007) and the National Informatization Basic Plan (2008~2012) were formulated. The organizations for formulation and coordination, the e-Government Professional Committee (2003~2005), the e-Government Special Committee (2005~2006) and the Council on Information Strategies (2009~), formulated them. The Ministry of Public Administration and Security (MOPAS) and the National Information Society Agency (NIA) have taken charge of the implementation in the Lee, Myung-bak government, whereas the MIC, the Ministry of Government Administration and Home Affairs (MOGAHA) and the NIA did during the Roh, Moo-hyun government. In terms of financial resources, the role and scale of the Informatization Promotion Fund was decreased, and the general account budget is used for the e-Government policies from 2005. In this stage, the infrastructure establishment which had been implemented was completed and stabilized, and the integrated governmental service was established. Thereby, various public services are provided to citizens through online regardless of time and space.

In the sixth chapter, the case of e-Government in Korea is briefly evaluated and its implications are presented. The reason why the Korean e-Government is successful in spite of several constraints is covered, and the implications of Korean e-Government case for the developing countries which plan or implement e-Government are discussed.

In summary, this report is a paper which looks back into the development courses of the Korean e-Government, reviews the policies which have played an important role and looks into the contribution and influence. Also this report is written to draw lessons and implications.

Chapter 1

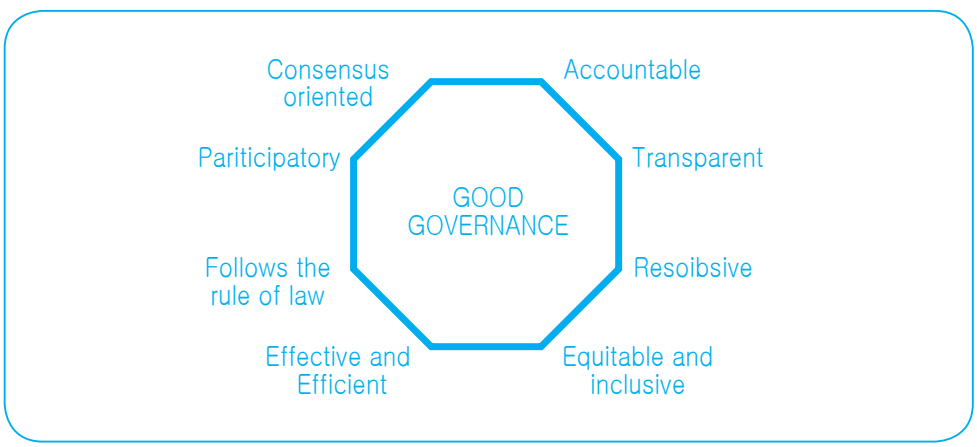
The Meaning of e-Government and its Current Status in Korea

The Meaning of e-Government and its Current Status in Korea

1. The Meaning and Role of e-Government

e-Government can be defined as the government which efficiently and effectively performs its administrative functions for citizens, businesses and other governmental agencies and accomplishes the task using information and communication technology or ICT. The ultimate goal is to establish "good governance" by utilizing ICT. As the [Figure 1-1] show, e-Government is an effective means to improve effectiveness, efficiency and transparency, to elevate the quality of public service, and to promote active public participation in governance. Also, it is a strategic tool for establishing a more accountable, responsive and equitable governance.

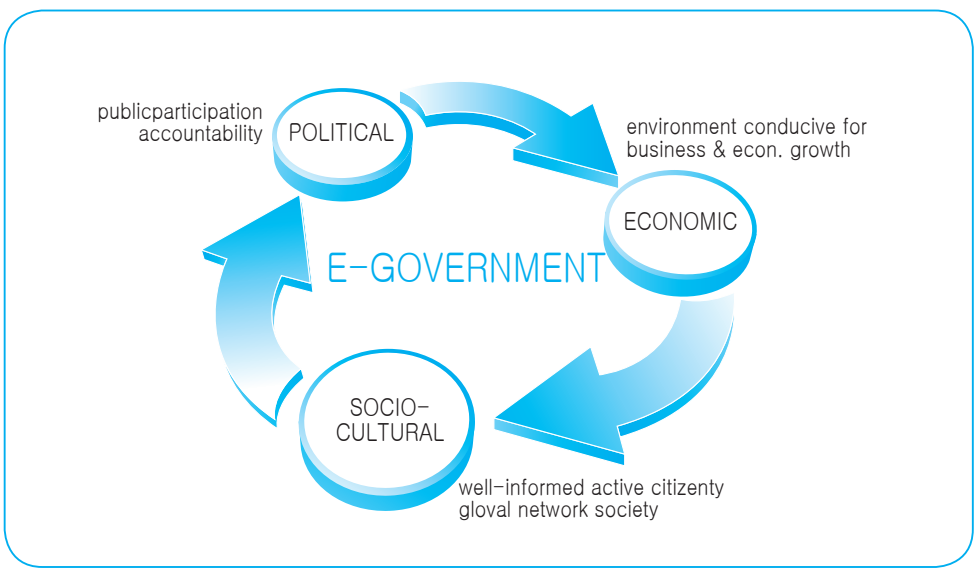
Figure 1-1 | The Goal of e-Government is to Facilitate Good Governance



As ICTs such as computer and the internet developed rapidly after 1980s, many countries made efforts to apply ICT to reform the government and adopted these projects as a high priority national agenda. Especially, the U.S. and U.K. started to promote e-Government as a core strategy for improving national competitiveness and accomplishing the government reform. The Bill Clinton administration, which used the term 'e-Government' for the first time, proceeded to reengineer business process through ICT for the purpose of reinventing government in 1993. The President's Management Council (PMC) in the George W. Bush administration, on the other hand, formulated and carried out 24 e-Government projects which were citizen-centered, results-oriented and market-based as one of the five President's Management Agendas (PMA) in 2001. In order to improve public services, the U.K. pursued e-Government project as a component of the Modernizing Government initiative announced by Prime Minister Tony Blair in 1999. Australia also started to build up the informatization network across the country in 1999 (On-Line Australia 1999). In addition to each country's policy, major international organizations and regional organizations such as UN, OECD and EU also have encouraged to prioritize e-Government and to raise the level of e-Government (MOPAS&NIA, 2008: 20~21).

e-Government was started to establish the better governance and improve the administrative efficiency. However, it has had effects on the political, economic and socio-cultural area beyond the governmental area as well. As the [Figure 1-2] shows, e-Government promotes a more participative political culture and reinforces politicians' responsibility to the public. Also, it makes administrative services more efficient, fosters a favorable business environment and subsequently contributes to the economic growth. From a socio-cultural view, it cultivates educated citizens and strengthens the social solidarity.

Figure 1-2 | Political, Economic and Socio-Cultural Effects of e-Government



The Relationship between e-Government and National Development

In general, e-Government has positive effects on the national development by raising the internal efficiency of government, improving the delivery of public services, promoting the ICT industry, reducing transaction costs, allocating resources efficiently, and increasing productivity (Subhash Bhatnagar, 2004, 37-60, Kim, 2007: 25-26).

If the information of each governmental agency is shared through e-Government, the government can reduce the costs of collecting and managing information. The quality of information can also be improved. With regards to the delivery of public services, several processes could be integrated, or the public services could be provided without a personal visit. If they were offered online, the corruption of street-level bureaucrats would be reduced. Especially, the levels of corruption are high in the customs, taxation, and procurement field in developing countries. If the tasks in these fields were conducted openly online, the transparency of government would be increased because the corrupt activities are likely to be caught (Subhash Bhatnagar, 2004: 39, 50).

If the transparency of government and the efficient delivery of public services are combined with economic activities, the total production of a society can be raised by improving the incentive structures. For instance, if a fair payment system became rooted in government procurement and some intermediate steps were omitted, the incentive for more resources to be inputted would be increased. If the delivery of public services were improved through e-Government, the social productivity would rise by decreasing the time required for visits and seeking information, thereby increasing the time for other productive activities (Subhash Bhatnagar, 2004: 57).

As a more direct economic effect, e-Government has a positive influence on the development of the ICT industry. The development and purchase cost for hardware and software used in e-Government establishment is transferred to the ICT firms as investment money, which can lead to promote the level of technology and employment. In addition, e-Government can increase tax revenues in a nation by enabling most transaction information on economic activities to be collected on one spot, tax agencies to capture taxable transactions easily, and citizens to pay their taxes conveniently. The gathered information on economic activities can help a government to formulate an effective fiscal policy (Subhash Bhatnagar, 2004: 58, 60).

However, the productivity paradox could also occur in the course of e-Government establishment. The productivity paradox refers to a macroeconomic phenomenon where the productivity does not increase despite a huge investment in ICT. It means that even if a lot of financial resources are spent on establishing e-Government, there would not be a considerable effect in terms of the government efficiency and transparency, the delivery of public services, and the economic growth. The productivity paradox is likely to occur when the information technology is introduced to the government while keeping the existing business processes. Therefore, it is necessary to combine the

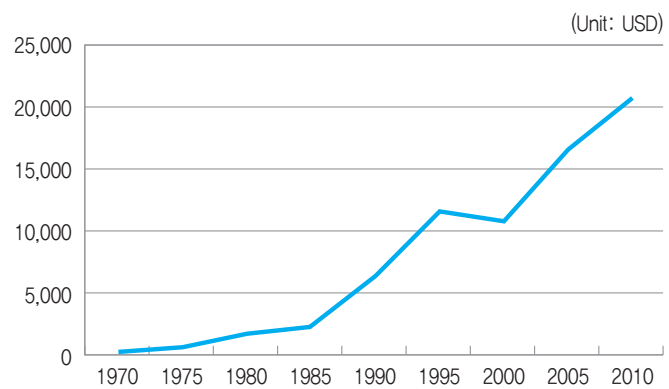
information technology and the business process innovation (Oh, 2010: 193).

The e-Government policies in Korea have been formulated and implemented to link e-Government with industrial development and business process innovation rather than just e-Government itself. The details are mentioned in the following chapters.

2. Current Status of Korean e-Government

Korea is an emerging developed country which overcame the destruction brought about by the Korean War. According to the IMF, the 2010 GDP of Korea was USD 1.007 trillion and is among the top 15 economies. On the other hand, its per capita GDP was USD 20,591 and is among the top 34 countries in terms of per capita GDP as of 2010. However, it needs to point out that the country's per capita GDP income was at best only USD 254 in 1970 and USD 1,645 in 1980. 30 years later, Korea's per capita GDP rose to above USD 20,000.[2] The precursor of e-Government initiatives was introduced in Korea in the late 1970s, mainly as a strategy for the rapid economic growth. e-Government and its related strategies not only increase transparency and efficiency, but also contribute to the economic development by fostering a business-friendly environment.

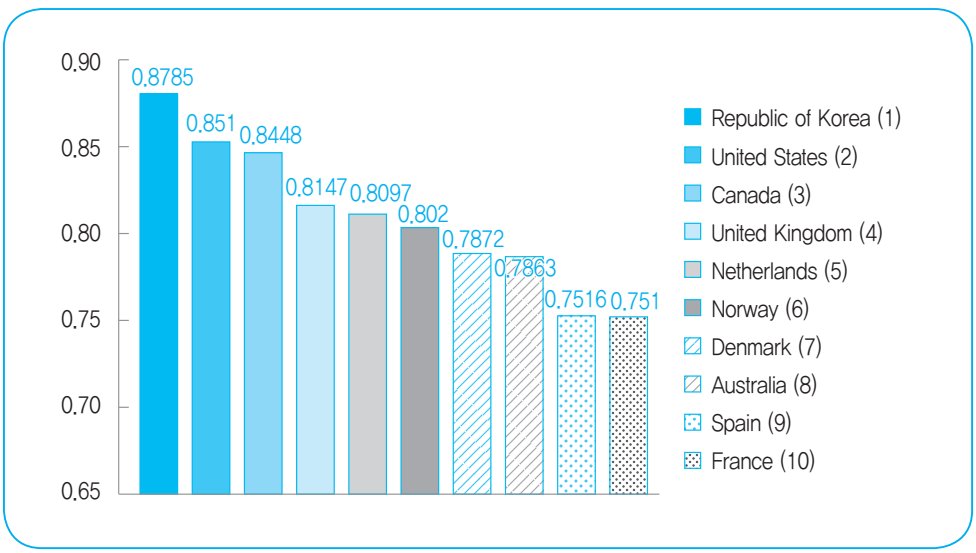
Figure 1-3 | Trend of Per Capita GDP in Korea



2 After this, the per capita GDP has rapidly increased: 6,147 dollars in 1990, 10,841 dollars in 2000, 16,306 dollars in 2005 and 20,591 dollars in 2010.

The e-Government of Korea is located at the top of several intergovernmental evaluations. Korea was ranked the 15th country in the UN e-Government Readiness Index in 2001 in the first evaluation. It ranked 6th from 2007 to 2009 but the country rose to the top of the world rankings in 2010 because of continuous e-government policies. Korea was recognized as the nation which operates the best e-Government system with higher ratings (0.8785) than the U.S. (0.8510), Canada (0.8448), the U.K. (0.8147), and the Netherlands (0.8097). Korea was also ranked first in the UN E-Participation Index in 2010, which is announced with the results of the e-Government index. The E-Participation Index is quantitatively measured by assessing how many e-Government web sites provide the relevant services and information to the citizens, which facilitates their participation in formulating public policy.

Figure 1-4 | Top 10 Countries in e-Government Development Index in 2010



Source: UN e-Government Survey, 2010

The excellence of Korean e-Government is recognized in the international e-Government competitions as well as in the international e-Government indexes. The seven initiatives of the five Korean government institutions received the UN public service awards in 2011. Among them are the two initiatives of the MOPAS which is in charge of the overall Korean e-Government. The Information Network Village (INVIL) won the first place in the category of fostering participation in public policy-making decisions. The 24-Hour E-Services for the Public (Minwon24) won the second place in the category of improving the delivery of public services.

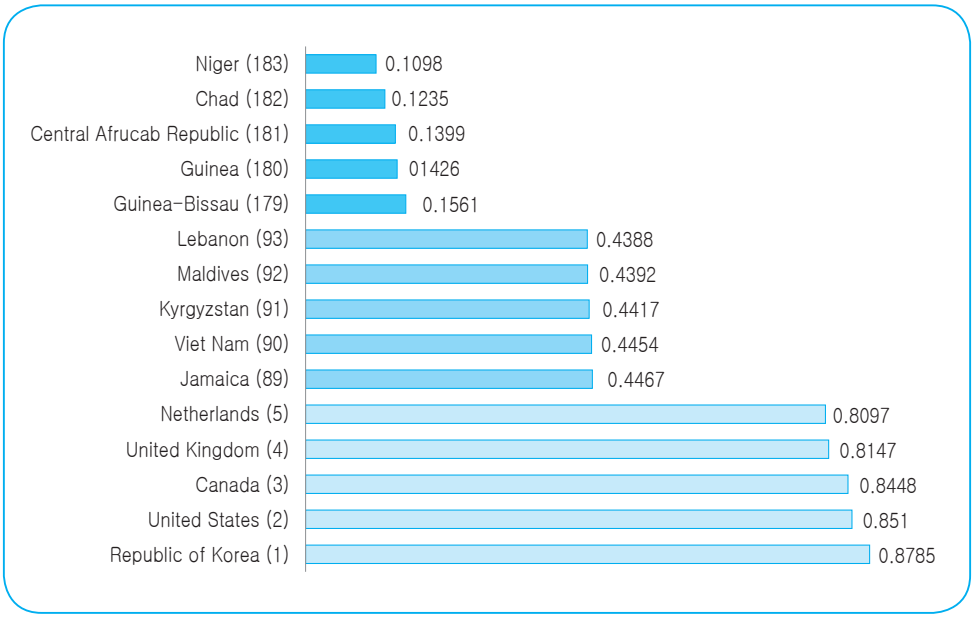
Table 1-1 | List of Korean e-Government Winners in the 2011 UN Public Service Awards

Institution	Initiative	Result	Category
MOPAS	Information Network Village (INVIL)	1st	Fostering participation in public policy-making decisions
	24-Hour E-Services for the Public (Minwon24)	2nd	Improving the delivery of public services
Human Resources Development of Service of Korea	Migrant&Business Friendly Recruitment System	1st	Preventing and combating corruption in the public service
Seoul Metropolitan Government	Open Tax Court for Citizen	2nd	
	Self-Empowerment Program for Runway Teenage Women	2nd	Promoting gender-responsive delivery of public services
Gyeonggi Women Development Centre	Online Career Coaching Services	2nd	
Anti-corruption and Civil Rights Commission	E-People System: People's Voice Knowledge Management	2nd	Advancing knowledge management in government

Source: MOPAS (2011.05.01). 'INVIL won the 1st place winner in 2011 UNPSA'

As mentioned above, e-Government contributes positively to the development of politics, economy and society in a nation and the e-Government of Korea is world class. However, aside from these facts, we should focus our attention on the two following aspects with regards to the development of e-Government. First, as [Figure 1-4] shows, there is a considerable variation in the level of e-Government development of each country. The mean value of the top 5 countries is 6.25 times higher than that of the lowest 5 countries. The index of Korean e-Government is almost 2 times as high as the average of the middle group. This means the information gap among countries exists and varies broadly. It can cause other broad gaps in the area of economic, political and social development. This information gap is likely to get wider as time goes by. Also, it is difficult for the late starters to narrow the gap by themselves. For this reason, the leading countries such as Korea should share their successful experiences with the middle and lower developed e-Government countries, and should provide assistance to develop a suitable strategy for each country in order to pursue a broader and more balanced e-Government development of the global society.

Figure 1-5 | Comparison of the Top 5, Middle 5 and Lowest 5 Countries in the UN 2010 e-Government Survey



Source: UN e-Government Survey, 2010

Second, the leading countries did not reach the current status naturally by itself. In the case of Korea, there were several constraints and problems in the course of e-Government development. Looking back, Korea was faced with technical, administrative, economic, political and social difficulties, sometimes interrupted by serious crisis in the course of development. The level of information technology and industry development was relatively low, and there was the lack of budget and ICT infrastructure in Korea in the 1980s. Nevertheless, Korea overcame these difficulties through various policy tools and strategies as shown by its recent successes. Therefore, in order to raise transparency and efficiency of government, promote economic development, the latecomer countries need to elaborately learn what e-Government policies Korea pursued, what the background, instruments and constraints of the policies were and how Korea overcame them.

The goals of this report are to share the experience of Korean e-Government with countries who wish to establish their e-Government systems, and to help them to develop the appropriate strategy suitable for their conditions by looking back at the history of Korean e-Government and by suggesting the success factors, challenges and responses to the challenges. To achieve these goals, we classify Korean e-Government development into four stages, and then look into the background, goals, main projects, organizations,

financial resources, restrictions, countermeasures and outcomes of each stage. We hope that this report will provide lessons and implications which can serve as a good reference to developing countries.

3. Classifying the Development Stages of Korean e-Government

Initially, computers were introduced to Korea, with the adoption of the punch-card system, a basic computer in the bureau of census in the Ministry of Home Affairs (MOHA) in 1961, and the IBM 4101 for the task of survey and statistics in the Economic Planning Board in 1967. However, the level of e-Government was still very low at that time. The earliest e-Government policy was started in 1978 when the Ministry of Government Administration (MOGA) formulated the first five-year Basic Plan for Administrative Computerization (1978~1982). In fact, Korea had started partial computerization of administrative tasks in each central government ministry.[3] This is the Basic Plan for Administrative Computerization which was started in response to the need for national implementation and consolidation of the sporadic and partial computerization among agencies.

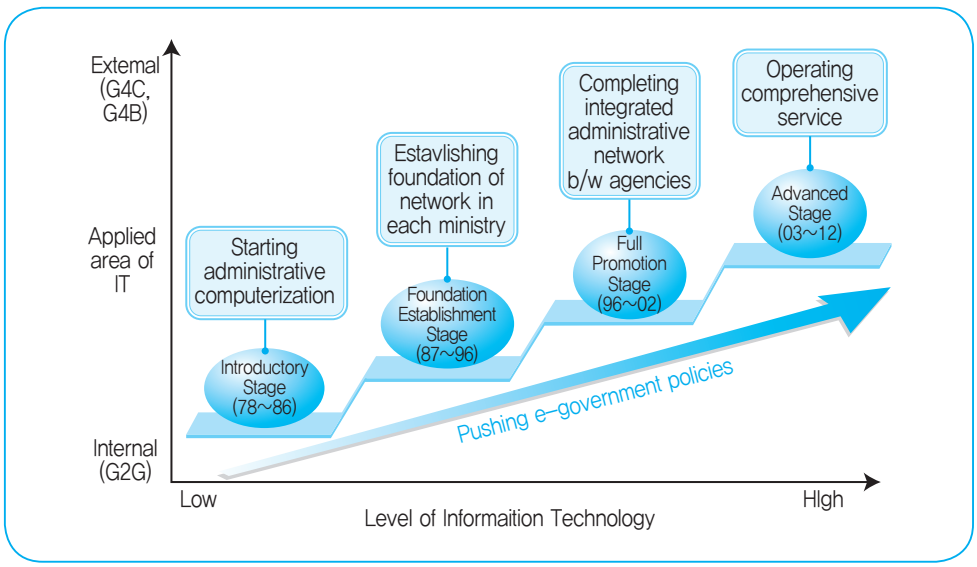
Since the Basic Plan for Administrative Computerization was promulgated in 1978, the development of Korean e-Government can be broadly classified into four stages (or periods) as shown in the [Figure 1-6]: the introductory stage (1978~1986), foundation establishment stage (1987~1996), full promotion stage (1996~2002) and advanced stage (2003~2012). The first period, introductory stage, covers from 1978 when the first Basic Plan for Administrative Computerization was formulated to 1986. The main feature of the first stage is the computerization of administration. In this period, the level of information technology was still at the punch-card computing level and information technology was initially introduced and applied to simple tasks and batch processing of large volumes of data in the government. The focus of e-Government at this stage was to raise work efficiency through the computerization of each ministry's task (internal) rather than inter-ministry task (G2G). It was impossible for the government to directly provide on-line public service to citizens due to weak network foundation and infrastructure. Also, the computer penetration rate among citizens was very low.

The second period, the foundation establishment stage, covers 10 years from 1987 to 1996. The main distinguishing feature of this period was the establishment of an administrative network in each central government ministry based on the computerization of administrative tasks in the previous period. During this period, the rate of diffusion and utilization of computers in the government, which began in the first stage, was broadened. A network infrastructure was established and data transfer data and information sharing

3 In April 1970, after a demonstration of the computerization of budgeting task in the Economic Planning Board to the President Park, Chung-hee, the enormous task of processing telephone charges of the Ministry of Post and Telecommunications and the internal tasks of the Customs Service, National Weather Service and Seoul Metropolitan Office started to be computerized the following year

(G2G) among ministries using the network began. However, the effect of informatization was still confined to the improvement of internal efficiency because the work distribution for the production, sharing, and utilization of information was not yet defined in terms of the broader aspect of pan-government. Also, information exchange between the government and citizens did not yet occur because the network set up was focused only on government agencies, universities and research institutions even though the diffusion rate of computer among citizens had somewhat increased at the time.

Figure 1-6 | Course of Development of Korean e-Government



The third period, the full promotion stage, covers the years from 1997 to 2002. At this stage, the integrated administration network among the governmental agencies was completed and administrative efficiency was rapidly raised by the super-highway information network. In this period, the infrastructure of network improved in terms of information technology and the coverage of the super-highway information network was no longer limited only to the government but also began to include common citizens. A systematic connection and utilization of the e-Government system and information sharing among governmental agencies started; therefore, information about the required goods and services of each governmental agency could be gathered on the spot. This paved the way to the realization of on-line procurement (G2B). Moreover, the two-way information exchange between the government and citizens and the provision of public services on-line (G2C) began in this stage thanks to the increased diffusion rate of computer and the wide availability of a high speed information network.

The fourth period, the advanced stage, covers the years from 2003 to 2011. This period is characterized by the provision of uninterrupted public service to citizens and businesses through the integrated national administration network. In other words, the e-Government infrastructure (Back Office) which had been built up in the previous stage was completed and settled, and it made the government-wide and comprehensive public services possible. Most citizens can make good use of IT equipment (e.g. computer, laptop and smart phone) and use the super-highway information network; therefore, several governmental services can be offered to citizens and businesses on-line, in real time, without constraint of time and space.

As mentioned above, the course of e-Government development in Korea featured initial administrative computerization, establishment of a network foundation for each government agency, completion of an integrated administrative network among agencies, and the advancement of e-Government service in each stage respectively. Korea was also faced with difficult challenges, but became a leading e-Government country by successfully overcoming them. In the following chapters, the implications of Korea's e-Government experience for other developing countries will be discussed along with specific challenges and solutions.

Chapter 2

Introductory Stage (1978~1986)

1. Background and the Goal of the Preliminary e-Government Policy
2. Policy Tools
3. Outcomes and Limitations

Introductory Stage (1978~1986)

1. Background and the Goal of the Preliminary e-Government Policy

1.1 Background of Policy Introduction

The first period of Korean e-Government development covers 9 years from 1978, when the first Basic Plan for Administrative Computerization was formulated, to 1986, when the main central ministries and agencies engaged in computerization. Even though computers were introduced to some ministries and agencies before 1978, the scope of computerization was limited to a few tasks and most documentation tasks were accomplished on a typewriter because of the very low diffusion rate of personal computers at the time.

In this situation, there were two rationales for the e-Government policy. First, the Korean government decided to foster the development of the computer industry in order to be competitive internationally in the course of economic development. Because there was no computer industry in Korea at the time, the government set up a committee for computer development under the Ministry of Science and Technology (MST) and tried to introduce computers. Even if the project of computer introduction was considered to have failed later, it was a meaningful attempt. The lack of natural resources for the economic development and the experience in this initiative become a foundation for pushing an e-Government policy. An initial batch of computers was introduced to Korea in 1961 with the adoption of the punch-card system, a basic computer in the bureau of census in the Ministry of Home Affairs (MOHA). Afterwards, in April 1967, the IBM 4101 was introduced in the Bureau of Survey and Statistics in the Economic Planning Board and the MST was established. In September 1967, the MST tried to promote the computer industry by establishing the Seven-year Plan for Computer Development and the Committee for Computer Development. In this manner, the initial batch of computers was introduced by the Korean government.

Second, the other rationale for e-Government introduction in this period was the desire to improve administrative efficiency. In April 1970, after a demonstration of the computerization of budgeting tasks in the Economic Planning Board to President Park, Chung-hee, the enormous task of processing the telephone charges of the Ministry of Post and Telecommunications and the internal tasks of the Customs Service, National Weather Service and Seoul Metropolitan Office started to be computerized in the following year. As some governmental agencies increased their productivity by utilizing computers, the e-Government project was started in order to improve administrative efficiency by computerizing administrative tasks.

However, the individual attempts to computerize administrative tasks in government agencies depended on the state of each agency and was generally sporadic and fragmentary rather than integrated. Therefore, the effectiveness of the computerization was low. It was argued that the e-Government project in each agency should be systematically formulated and spearheaded by the central government as a national policy rather than an individual project for each agency. For these reasons, President Park ordered that the administrative computerization be led by the national government. After that, the centralized administrative computerization began by transferring the Central Department of Computing under the Ministry of Science and Technology (MST) into the Governmental Department of Computing under the Ministry of Government Administration. The new department took charge of the improvement and assessment of overall administrative tasks and became the Ministry of Public Administration and Security (MOPAS) later on. The Ministry of Government Administration organized the Administrative Computerization Committee and established the ground rules and basic plans to computerize administration at the national level. In 1978, the first five-year Basic Plan for Administrative Computerization (1978~1982) was formulated and started to be implemented. It was the first national policy wherein Korea integrated the fragmented administration computerization projects implemented by each agency (Online National Archives of Korea, Administrative Computerization,[4] Seo, 1997). However, there was no concept of standardization at the time and the impact of the administration computerization was assessed considerably low.

1.2 Goal and Strategy

The goal of e-Government policy in the introductory period was to computerize administrative tasks. Computerization, a step required before informatization, refers to the introduction of computers and their use in inputting and processing massive amounts of data. Thus, it is far from the production and distribution of information through network and online citizen participation which is the usual concept in the current e-Government paradigm. This period was the stage where information technology was still at the punch-card computing level and it was only introduced and applied to simple tasks and batch

4 http://contents.archives.go.kr/next/content/listSubjectDescription.do?id=001951

processing of large volumes of data in the government. The e-Government in this stage was focused mainly on the computerization and improvement of work efficiency within each governmental agency rather than work among agencies. Also, it was difficult to provide on-line public services to citizens due to the weak network infrastructure and the low diffusion rate of computers at the time.

A centralized approach was used in this period as the Ministry of Government Administration formulated and implemented the e-Government policy which covered all agencies. It was similar to the five-year economic development plan which led the Korean industrialization.[5] However, it was impossible to integrate e-government policy covering the whole government because the first five-year Basic Plan for Administrative Computerization was established by putting the various computerization plans of each agency together.

2. Policy Tools

2.1 Legal Framework and Projects

The major policies and projects related to the e-Government policy in this period included the Rule of the Administrative Computerization Committee promulgated in August 1975 as a Presidential decree, the Rule of Administrative Task Computerization issued in June 1979 as an ordinance of the Prime Minister, the first Basic Plan for Administrative Computerization drafted in 1978, the revised Rule of Administrative Task Computerization issued in January 1982, and the second Basic Plan for Administrative Computerization established in the same year based on the revised rules.

According to the article 1 of the Rule of Administrative Task Computerization, its aim was to set up rules about the computerization project to systematically implement the project. The article 2 of this rule directed the Minister of Government Administration to prepare a five-year basic plan for administrative computerization. The article 3 also directed each minister to formulate a specific action plan according to the basic plan and to submit the plan to the Minister of Government Administration by the end of December of the year. The first and second Basic Plan for Administrative Computerization was formulated based on the article 2.

The First Basic Plan for Administrative Computerization was formulated in 1978 and implemented from 1978 to 1982. The objectives of the first plan were: to develop eighty important tasks of thirty agencies; to partially form a network and to jointly use computers in dealing with the tasks of each agency; to install computer centers in each province for

5 After this, the five-year centralized strategy enhanced the rapid and efficient implementation of the policy in the case of not only in the industrialization, but also in e-Government. It became a symbolic strategy of the rapid economic and technical development at the time. The five-year centralized strategy continued even after the change of President and during the period of democratization. For example, the Korean e-Government plans were based on the five-year centralized strategy during the foundation establishment stage (1987~1996), the full promotion stage (1996~2002), and the advanced stage (2003~2012) as well as the introductory stage.

the computerization of local administration tasks and to connect thirty three cities together through a network. The objectives also included setting the conditions for computerization by surveying the demand for administrative information as a preparation for building an administration data base; developing related techniques; improving relevant administrative institutions; securing human resources and raising awareness among rank-and-file public servants.

The Second Basic Plan for Administrative Computerization was formulated in December 1982 and implemented from 1983 to 1986. It aimed at integrating the important tasks developed during the first plan by each agency and establishing a nationally integrated administrative information network. That is, the plan intended to widen the scope of the computing network of each agency established during the first plan, to integrate them, and to link not only most central agencies but also community level local governments. Moreover, the plan was designed to build up the administrative databases of each area based on the initial survey conducted during the first plan, to establish their system of usage, to address the weaknesses of the first plan, and to set the conditions for continuous computerization.

In the introductory stage, the Korean e-Government primarily focused on computerization. However, it started to plan the linking/networking of the computerized main tasks at the end of the introductory stage. In 1983, the Information Industry Promotion Committee was organized and began operations. The proposal to build up the national basic computing network was drafted in July and the keynote of the National Basic Computing Network Project was finalized in December in the same year. In the keynote, it was decided to build up the national basic computing network for the following areas: administration, monetary, education/research, national defense, public security field. As the primary organization tasked its energies to push forward the project, the Information Industry Promotion Committee was reorganized into the National Backbone Network Steering Committee in April in the following year. The tasks subjected to computerization were selected to address the defects which were identified in the previous evaluation, and the ways to develop, supply, and operate the necessary computer resources were decided in June in the same year.

Finally, the Administrative Computing Network Project Plan was established in May 1985 as a main sub-project and e-Government project of the National Basic Computing Network Project. In the Administrative Computing Network Project Plan, six activities[6] were specially selected. The "invest first, settle later" strategy was adopted to implement the activities and the computerization of post offices was chosen as a pilot project (Computing Network Steering Committee, 1989: 12). The specific timeline of the Administrative Computing Network Project Plan indicated that the contents to be computerized and training plans were going to be confirmed by the middle of 1985, the integral design of

6 Even though a project is classified as a subordinate concept of an activity in some public management literature, an activity is classified as a subordinate concept of a project to simplify translation in this book.

administrative network was going to be confirmed by the end of 1985, the distribution of computer terminals to public officials was going to be started by the middle of 1986, the software for early stage task was going to be developed by the end of 1987, and the administrative computing network was going to be operational by the early part of 1988 (Cyber history hall about the 20th century information communication of the National IT Industry Promotion Agency, "Administrative Computing Network Basic Plan").[7] At this point, the groundwork for the foundation establishment stage, the development of computing networks within the government, was set.

2.2 Organization

2.1.1 Ministry of Government Administration (MOGA)

The administrative computerization projects in the introductory stage were pushed forward by the Ministry of Government Administration and the committee under the ministry. Before these projects, computerization was carried on by the individual agencies: the National Statistical Office, the Ministry of Science-Technology (MST), the Economic Planning Board, the Ministry of Post and Telecommunications (MOPT), the Customs Service, the National Weather Service, the Seoul Metropolitan Office, and so on. However, the administrative computerization led by the Ministry of Government Administration (MOGA) was begun with the reorganization of the Central Department of Computing under the Ministry of Science and Technology to the Governmental Department of Computing under the MOGA. In June 1975, the Bureau of Administrative Computing Plan was organized. The Administrative Computerization Committee was established according to the Rule of the Administrative Computerization Committee in August 1975. The first Five-year Basic Plan for Administrative Computerization was drawn up by the Ministry of Home Affairs (MOHA) in 1977. However, the Bureau of Administrative Computing Plan, which directed the administrative computerization was reorganized and integrated into the Department of Computing Plan in May 1979. Afterwards, the Department of Computing Plan was renamed the Administrative Computing Department in November 1981 (Chung, 2009: 39; NCA, 1993: 20).

2.2.2 Information Industry Promotion Committee and National Backbone Network Steering Committee

The organizations, which planned the National Basic Computing Network Project after the first Five-year Basic Plan for Administrative Computerization, were the Information Industry Promotion Committee and National Backbone Network Steering Committee. The Secretary's Office for Economic Affairs recommended the strategies to foster information industry to the President in March 1983. He recommended the establishment of the

7 http://20c.itfind.or.kr/100/5_4_3_0.html

Information Industry Promotion Committee as an organization preparing to syntagmatically operate the computing network of governmental agencies by building up a large network. Right after the suggestion, the existing Semiconductor Industry Promotion Committee was reorganized into the Information Industry Promotion Committee. The Chief Presidential Secretary was announced as the chairperson of the committee. The vice-ministers of the Ministry of Home Affairs (MOHA), Ministry of Science and Technology (MST), Ministry of Culture and Education (MOCE), Ministry of Commerce and industry, Ministry of Post and Telecommunications (MOPT) and experts from related agencies were appointed as the members of the committee (NIA, 2007: 92). The committee solicited the opinions and suggestions from 200 governmental agencies and experts and recommended the National Basic Computing Network plan on July 1983. In response, the keynote of the project was formulated in December 1983 and it was decided that the administrative network, financial network, education/research network, national defense network, and public security network were to be covered by the National Basic Computing Network Project. Each agency focused on improving their work using computers, and a specialized computing agency took charge of technical work.

The Information Industry Promotion Committee was reorganized into the National Backbone Network Steering Committee in 1984 because a new organization which would be in charge of the computing network project was requested when the Information Industry Promotion Committee was integrated into the Deliberation Committee of Technology Improvement in March 1984. The National Backbone Network Steering Committee was launched in March 1984. The Chief Presidential Secretary was appointed as the chairperson of the committee, and ten persons were appointed as members of the committee including the vice-ministers of the MST, the MOPT, the MOCE, the Ministry of Commerce and Industry, the Presidential Secretaries for Political Affairs, Economic Affairs, Culture-Education affairs and so on. The Presidential Secretary for Science-Technology was appointed as an assistant administrator. In addition, the working-level committee was formed under the steering committee (NIA, 2007: 92).

According to the interim report of the National Basic Computing Network Project Plan in June 1984, the National Backbone Network Steering Committee decided to coordinate and support the sub-projects in the administrative and financial network because there were a lot of related agencies and differences in their tasks. In contrast, in the case of the education/research, national defense, and public security network, the related agencies decided to autonomously discuss and carry on the sub-projects and it was decided that the National Backbone Network Steering Committee would intervene and coordinate only when problems occurred. After the interim report, the plans for each sub-project began to be formulated and concretely took shape in 1985. In May 1985, the interim report of the National Basic Computing Network and the Plan for Computing Network Investment obtained presidential approval (Cyber history hall about the 20th century information

communication of the National IT Industry Promotion Agency, "National Basic Computing Network Project").[8]

3. Outcomes and Limitations

As mentioned above, the introductory stage was a period in which the scattered computerization projects formulated and implemented by individual agencies were nationally integrated and primarily advanced by the central government. In the second period, the National Basic Computing Network Project Plan and the Administrative Computing Network Basic Plan were formulated based on the partially built computerization.

As a major outcome, car registration and car related civil services including the processing and issuance of driving license were computerized in 1982, while the task of processing and issuance of passports was computerized in 1983. However, in a strict sense, the first and the second Five-year Basic Plans of Administrative Computerization were far from a full-scale e-Government project because most sub-projects were carried out on an annual basis and the basic computing network which required massive investment was not yet established. In addition, it was not until April rather than January when the fiscal year started that they could spend the computerization budget because considerable time was taken during the process of budget deliberations in the National Assembly.

Generally, the actual period of the project was around nine months but most informatization projects required long-term and massive investment, so they could not be implemented because annual projects should be finished by December of each year. Also, the informatization project was implemented through contract agreements with private or public enterprises since the government did not have enough information technology capabilities. However, the enterprises hesitated to participate in the informatization project due to the discontinuous budget support.

Also, several side effects occurred in this period. Budgets were wasted because of the overlapping investments on the same or similar software development. Additional costs were incurred because each agency operated computer facilities independently. The computerization project was audited by the Board of Audit and Inspection because they did not share computing resources even if there was a redundancy when the agencies were not pressed with works (Online National Archives of Korea, Basic Plan of Administration Computerization).[9] Because of this, the Information Industry Promotion Committee was established directly under the office of the President in order to prevent the unreasonable introduction of computers and overlap in software investment.

To sum up, there were three main accomplishments in this period: first, the computerization was partially applied to administrative tasks; second, the necessity of the national basic computing network and the administrative computing network was highlighted; and third,

8 http://20c.itfind.or.kr/20/5_4_2_4.html
9 http://contents.archives.go.kr/next/content/listSubjectDescription.do?id=001960&pageFlag=A

the Administrative Computing Network Project Plan which was the forerunner of the First Administrative Computing Network Basic Plan was established in May 1985, which was the main sub-project and e-Government project of the National Basic Computing Network Project. However, despite the formulation of this plan, none of the agencies responded positively. For instance, the Samsung Economics Research Institute (SERI) openly opposed the plan as the plan goals were thought to be impossible to achieve due to the lack of the technical and natural resources. In addition, the budget was not included in the plan because of different opinions among governmental agencies. For this reason, President Chun, Doo-hwan asked the agencies to agree on a plan. This is the reason why the National Basic Computing Network Project and the Administrative Computing Network Basic Plan were not implemented. The task of implementing the plan was passed to the next period.

An Interview with a Former Chief of NIA, Lee, Chul-Soo

[Profile] 1982~1984, The head of the office automation department at the Data Communication Corporation Of Korea (DACOM); 1991~1993, The executive director at DACOM in charge of the Administrative Computing Network Project; 1992~1993, The chief of the research institution at DACOM; 1993~1998, The chief of NIA; 2008~Present, The chief of the Korea Association of Information systems Audit (KAISA)

■ What do you think of the meaning of the Administrative Computing Network Project to the e-Government of Korea?

The most important factor, which enabled the e-Government of Korea to enter a new phase (Foundation Establishment Stage), was the Administrative Computing Network Project. The Basic Plans of Administrative Computerization (1978~1986) had limitations because they were simply combined plans from the computerization plan of each ministry. Even though they were formulated as five-year projects, they could not actually become long term projects due to the principle of one year (annual) budgeting. Establishing an information system requires plenty of money to be invested in the long term under risky and uncertain conditions. No matter how good a project plan is, the performance of the project will be poor if there are not enough financial resources commensurate with the project's requirements. For this reason, the "invest first and settle later" strategy was used. At that time, the budget institutions and the National Assembly were against it, because it could weaken their control over the budget. However, it was adopted thanks to the presidential will.

■ Why was President Chun, Do-hwan interested in the Administrative Computing Network Project even though he did not have the expertise on computer considering his military background?

His advisors played an important role on his firm will to push through with the Administrative Computing Network Project. At that time, the reports for the president and minister were handwritten. The word processors for Korean characters were developed in 1983, and the advisors suggested that the report for the president should be prepared with the word processor. The advisors convinced the President that although the initial word processor could have only forty to fifty words on a sheet of paper, it could help Korean IT industry to be developed. Several ministries expanded the usage of computers after the president began to receive printed reports.

■ What were the obstacles in the Administrative Computing Network Project?

A computing system could not immediately be operated smoothly upon establishment because hardware, software, and business characteristic and process need to be compatible and harmonized with one another. In the case of software, an error occured somewhere as soon as it was developed because it consisted of hundreds of thousands lines of computer instructions. For this reason, the providers and users of the computing system had to stabilize and revise the software by taking time to discuss. However, we could not do these adequately and even the task analysis on resident registration could not be conducted because there was a strong opposition from public servants in the MOHA during the first project. They, who would be the users of the administrative computing network, were not familiar with computers, and the project was determined by a few top officials and experts who saw the necessity for the project. Even then, most of them did not feel the need for the project. Thus, the DACOM needed to persuade them as well as to establish the system. Many of them thought that 'why we should use computers when we have been working well by hand', 'my position would be eliminated by computerization', and 'it does not make sense to connect all organizations of the MOHA'. It took a year to convince them of the importance of the project. The persuasion took such a considerable portion of project implementation that it took two years to develop the system.

■ I heard that the first main host (server) computer developed during the First Administrative Computing Network Project was subject to debate because of its frequent errors. Could you tell me a story about that in detail?

The first main host computer for the First Administrative Computing Network Project was the Tolerant TX. It was not completely localized because its technology was taken from the Tolerant Systems in the U.S. When Tolerant Systems was selected as a technology provider, some were suspicious of the validity and fairness of the selection because the technology provider was not well known like the IBM. In particular,

many system errors frequently occurred in the processing of the national pension transactions, which became an issue in the media. Finally, it became a government corruption scandal involving large amount (150 billion won) of the Administrative Computing Network Project funds. Originally, the computerization of the national pension affairs was not included in the First Administrative Computing Network Project. It was scheduled to be included in the second project after the inauguration of the next government. However, it was moved up by a year in order for the candidate of the ruling party to gain support of workers in the presidential election. In this context, the first main host computer, Tolerant TX, was developed in 1988, and the national pension bills were issued in January 1989. However, there were one million errors out of four million bills. This was because of a mismatch in the process of address coding. Finally, new servers were introduced from the IBM six month later. However, the cause of the system error of Tolerant TX involved not only technical factors but also other factors. In addition to moving up the computerization of national pension affairs, at that time, the national pension affairs were not yet institutionally organized. Naturally, there were difficulties in computerizing those affairs. In my opinion, the system error would not be confined to the Tolerant TX, given that the IBM server computers also took two or three years to stabilize.

- Lastly, what advice would you give to developing countries about e-Government project.

Above all, a strong coordinating organization is needed. I hear a large number of developing countries have their e-Government projects. In many cases, however, they have just plans for each ministry and the quality of the projects are not that good. Prior to the First Administrative Computing Network Project, Korea also went through a stage where computerization was separately pursued by each ministry (i.e. introductory stage). Finally, the Computing Network Steering Committee provided a momentum for effective e-Government projects.

Next, information on citizens and real estate should be computerized. This kind of information was prioritized during the computerization in Korea. It came from the idea that the foundations of a nation are based on people and land. This is not applied only to Korea. However, I am worried that some developing countries may have trouble in counting the accurate population and some high profile local citizens will oppose e-Government project due to corruption. How they overcome these constraints will be a critical factor in their success of e-Government project.

2011 Modularization of Korea's Development Experience
The Introduction of e-Government in Korea

Chapter 3

Foundation Establishment Stage (1987-1996)

1 Background and the Goal of the e-Government Policy

2. Policy Tools

3. Outcomes and Limitations

Foundation Establishment Stage (1987~1996)

The introductory stage was a period in which the scattered administrative computerization by individual agencies was integrated as a national policy. In the last half of the period, the National Basic Computing Network Project and the Administrative Computing Network Basic Plan were formulated based on the partially built computerization.

Following the introductory stage, the foundation for e-Government in Korea was established from 1987 to 1996. As the introductory stage was not effective, e-Government policies were pushed with the intention to maximize the effect of e-Government projects by linking e-Government projects with information industry development. During this period, the computer distribution and its usage rate within the government increased and applications involving massive data inputs and batch processing began. The network foundation was established and exchanges of data and information between governmental agencies through the network began.

This period is divided into two sub-periods. The First National Basic Computing Network Project covers the period from 1987 to 1991. This is sub-period in which the administrative, financial, education/research, national defense, and public security networks were established in order to improve the efficiency of the public sector and to pave the way to information industry development. The Second National Basic Computing Network Project from 1992 to 1996 saw the continuation of projects and the activities in the first project and further developed while focusing on interconnecting computing systems.

1. Background and the Goal of the e-Government Policy

1.1 Background of Policy

The Second Basic Plan for Administrative Computerization was formulated in 1983 and included the National Basic Computing Network Project Plan, which covers the development of the administrative, financial, education/research, national defense, and public security networks. However, the actual implementation could only be started after 1987, when the legal framework, budget and organization for the plan were actually available. There are two distinct features of the National Basic Computing Network Project in the second stage.

First, the project started as a response to continuous demands to make administration efficient. The initial administrative computerization could not meet the increasing demands for citizens' public services. As a response, the National Basic Computing Network Project was pushed with the view that government should recognize the various demands from citizens and that the new administrative paradigm should fully be built up through informatization.

Second, the project was advanced to foster the development of the electronic industry and information industry as a component of Korea's economic development strategy. The electronic industry in Korea was still at the basic level and the information industry was at a modest the level in the 1980s when the national basic computing network plan was formulated. The government organized the Semiconductor Industry Promotion Committee and designated the semiconductor, computer, and electronic switch as the three strategic products in 1981 and decided to combine computerization with information industry development. The Semiconductor Industry Promotion Committee and Information Industry Promotion Committee came up with the plan for integrated information industry promotion in March 1983. The demand for semiconductor was increasing at the time due to the widespread distribution of color televisions. The demand for the electronic switch was also increasing because telephones were beginning to proliferate at the time. However, the government still needed to create domestic computer demand through the administrative computerization project because there was no computer market in Korea even if computers were already being produced in Korea. This is the most crucial context of the National Basic Computing Network Project.

As mentioned above, the National Basic Computing Network Project was a strategic project aiming at simultaneously fostering the computerization of national society, preparing for an information society, and promoting the domestic information industry. The project was intended to provide convenience to citizens and attain higher efficiency among governmental agencies by fostering computerization in the government, financial, education, and research institutions. At the same time, expenses spent on the project will contribute to the promotion of the domestic information industry, the localization of the basic system of computers and networks, and the establishment of a basic computing network (MIC&NCA, 2005).

1.2 Goal and Strategy

The goal of the National Basic Computing Network Project was to advance Korea into an information society at the level of developed countries by 2000. In order to attain this goal, Korea completed the national basic computing network by the middle of 1990s, pursued the realization of a small but efficient government and higher productivity of enterprises, and then ultimately would secure and maintain national competence in information technology. This plan had two policy purposes which are the computerization of the society and the promotion of domestic information industry. This project embodied the desire of the Korean government to realize efficient government, improve citizens' convenience, and foster productivity of enterprises by computerizing four public areas including: the administrative, financial, education, and research institutions while simultaneously trying to develop the information industry by developing the fundamental factors of computer and networks based on the demand from the computing network project.

In this period, the "top down" strategy and the "invest first, settle later" strategy were adopted because the computerization project in the previous stage caused technical problems related to standard and compatibility issue and the benefits of computerization was small compared to the costs. First, the "top-down strategy" means that six tasks including resident registration, real estate, employment, customs, automobile, and economic statistics were determined as the primary objectives of the computerization project. The computerization approach of the individual agencies was to be changed and the networks were to be linked based on the type of task. Second, the "invest first, settle later strategy" was a financing technique in which the providers spent the initial cost for completing the project and the government will pay the provider from its earnings afterward. Using this strategy, Korea could spread the high risk of such a large scale project and overcome budget constraints.

Korea could avoid the trial and error experience of the developed countries and bring out the merits of being a latecomer through the top down strategy. In other words, the strategy involved concentrating on the areas which have high impacts and the benefits will be maximized by combining and simultaneously pursuing the establishment of the national basic computing network, improvement of public service, and the development of the domestic information industry.

First, to achieve its goals, first, the national basic computing network was divided into five sub-networks: the administrative network covering governmental agencies, the financial network covering the bank, insurance, bond, the education/research network focusing on university and research institutions, and the national defense network, and public security network. Second, the task to improve citizens' convenience was specially pushed to improve public services. Third, the cooperation between public agencies was promoted by expanding the scope of the computing network and operation and by ensuring the compatibility between equipment and technique and sharing information. Fourth, the basic system of network and computers were localized, and the establishment and the operation of the basic computing network were carried out using domestic technologies in order to foster

the development of the domestic IT industry while spending for computerization. Its focus was on standardizing and producing PCs and on localizing the production of main host computers (i.e. middle sized servers). The intention was for the information to be utilized by several agencies by inputting the information into the servers. And daily tasks were to be conducted by the PCs connected to these servers. Fifth, the plan aimed to improve citizens' convenience and upgrade national competency by completing it by 2000 in the medium and the long term. The project intended to be carried out by year and stage with considering the efficiency of investment. Above all, the computerization of administrative tasks allowed frontline users to improve efficiency in carrying out their tasks. In the early 1990s, the National Basic Computing Network Project aimed to realize small government and improve administration for the citizens' convenience (MIC&NCA, 2005: 29~32).

To establish the foundation of an information society, it was necessary to pursue national computerization and networking rather than just the computerization of simple administrative tasks. Thus, the First Administrative Computing Network Basic Plan was formulated and selected the six priority tasks in the fields of resident registration, real estate, automobile, customs, employment, and economic statistics, all of which have significant effect to the life of the citizens.

Even if the administrative tasks were computerized and computerized administrative information was utilized in an agency, the effective value may be diminished and plenty of human resources and budget may be wasted if there are overlapping investments on similar tasks. During the Second Administrative Computing Network Project, therefore, a system of co-utilizing administrative information was set as the first objective in order to allow relevant information gathered, developed and utilized by related agencies to be used in accomplishing existing tasks as well as the six tasks in the first plan. To accomplish these, the Second Administrative Computing Network Project Plan established a role distribution system between related agencies by giving the Department of Computing in the Ministry of Government Administration (MOGA) the functions of a computing center: to collect, analyze, process, and distribute administrative information co-utilized by various agencies (Online National Archives of Korea, Administrative Computerization).[10]

2. Policy Tools

2.1 Legal Framework and Project

The legal framework for the Plan of the National Basic Computing Network Project was based on the Act on Establishment and Utilization of Network (or the Computing Network Act) enacted in May 1986. The Computing Network Steering Committee was organized according to the law in order to deliberate and coordinate the major programs and activities related to the development, distribution, and promotion of utilization of the computing network. The National Computerization Agency (NCA), responsible for

10 http://contents.archives.go.kr/next/content/listSubjectDescription.do?id=001951

inspection, standardization, and technical support was established in 1987. In addition, the Administrative Computing Network Basic Plan was formulated based on the Computing Network Act in April 1987. The basic plans of the education/research, financial, national defense networks were formulated respectively in 1988. During the Second National Basic Computing Network Project, the second basic plans of administrative, education/research, financial, and national defense networks were simultaneously formulated in 1992, which aimed at supplementing, enlarging, developing, and stabilizing the operation of the national basic computing network. <Table 3-1> shows the list of relevant policies, their objectives, and sub-plans.

Table 3-1 | Major Plans in the Foundation Establishment Stage

	The period of the 1st National Basic Computing Network Project	The period of the 2nd National Basic Computing Network Project
Objectives	- To realize the information society at the level of developed country by the early 2000s - To establish the national basic computing network by the middle of 1990s - To realize small and efficient government - To secure and maintain the national competence through high productivity of enterprise	- Enlargement, supplement, development and stable operation of the national basic computing network
Major sub-plans	- The Plan to Distribute Multi-functional Office Equipment (PC) (1986) - The 1st Administrative Computing Network Basic Plan (1987) - The 1st Education/Research Computing Network Basic Plan (1988) - The 1st Financial Computing Network Basic Plan (1988) - The 1st National Defense Computing Network Basic Plan (1988) - The 1st Research Computing Network Basic Plan (1988) - Comprehensive Countermeasures for Information Society (1990)	- The 2nd Administrative Computing Network Basic Plan (1992) - The 2nd Education/ Research Computing Network Basic Plan (1992) - The 2nd Financial Computing Network Basic Plan (1992) - The 2nd National Defense Computing Network Basic Plan (1992)

2.1.1 The Act on the Establishment and Utilization of Network (Computing Network Act)

The bill pushing for the informatization of each area in the national society efficiently and promoting the information communication industry strategically failed to pass in the course of discussion among related agencies, even though the government had tried to enact such a law from the early 1980s. In 1985, the Ministry of Post and Telecommunications (MOPT) proposed the Act on Promotion of Information Society Foundation, which was renamed the Computing Network Act, and it was enacted in the following year.

The National Basic Computing Network Project was formulated based on the law. The law paved the way for the formulation of the basic plan for establishing and utilization of networks beyond the existing telephone based network. It also contributed to the establishment of the foundation for the informatization of public services and reflected the new paradigm of Korean IT policy. The Computing Network Steering Committee which was directly under the President was formed and the National Basic Computing Network Project in the fields of administration, monetary, education/research, public security, and national defense was implemented (MIC&NCA, 2005: 32~33).

According to article 4 of the law, the Minister of Home Affairs was to formulate the National Basic Computing Network Project plan in order to foster the establishment and utilization of information networks and to pave the way for the development of an information society. The sub-plans in each field were formulated based on the main plan in 1987.

Table 3-2 | Major contents of the Computing Network Act

The Act on Establishment and Utilization of Network
Article 4 (Formulation of Basic Plan about Computing Network Development and Distribution) ① The MOPT should promote computing network development and distribution and should formulate and notify the basic plan about it. In case of changing the plan, the ministry should do in the same manner. ② The basic plan should include the followings. 1. Computing network development for governmental agency 2. Development, distribution and usage promotion of the technique and equipment about computing network 3. Supporting and fostering the computing network project 4. Development and utilization of new equipment 5. Training technical professionals 6. Other necessary things for the computing network development, distribution and utilization ③ The basic plan should be discussed in the Computing Network Steering Committee before the ministry finalizes the basic plan

2.1.2 The First National Basic Computing Network Project and Administrative Computing Network Basic Plan (1987~1991)

The basic idea for the National Basic Computing Network was formulated as a national policy after the Information Industry Promotion Committee organized in May 1983, and the Computing Network Steering Committee reorganized from the Information Industry Promotion Committee in March 1984 decided the basic direction and keynote. However, the basic plan for actual implementation was carried out only after the enactment of the Computing Network Act, the organization of the Computing Network Steering Committee, and the completion of related legal framework and financial resources in 1987.

The Plan of the National Basic Computing Network Project first appeared in a formal government document in December 1983 in the draft plan of the National Basic Computing Network prepared by the Information Industry Promotion Committee. The draft plan based on the opinion of two hundred experts from relevant institutions was prepared. It focused on the goal of establishing and operating five national basic networks and fostering the development of the domestic information industry in order to maximize the benefits. Thus, to begin with, the National Basic Computing Network Project recognized the necessity of promoting of information industry from the onset.

The draft plan was finalized and incorporated into the final report of the National Basic Computing Network Plan after six months. The report set up the scope of the planned five basic computing networks as the administrative, monetary, education/research, national defense, and public security network. According to the report, the Blue House will supervise the five network project directly and a Computing Network Steering Committee will be established and launched in 1984.

An interim report of the National Basic Computing Network and the draft plan of Administrative Computing Network Project presented to the Blue House by the Computing Network Steering Committee in May 1985 were the milestones which led to the formulation of the National Basic Computing Network Project. The objectives, focal point, and organization in charge of each network were identified in the draft plan. In the case of the administrative network, the budget estimates for software, hardware, communication, and operation as well as an analysis of the projected budget reduction benefits that will result from computerization were provided.

The most important feature in the draft plan was the fact that the importance of the administrative network was emphasized. It was different from the previous documents which dealt with the five networks similarly. Further, the effects of the standardization of hardware, software, and network involved in the administrative network plan and the impact on localization of technologies to the information industry development were specifically discussed. Also, the experience from the establishment of the administrative network could be applied to the rest of the network project.

The budget required for the administrative network project indicated in the draft plan was estimated at KRW 760.7 billion from 1986 when the project partially started to 1995 when the whole project was to be completed. This included the calculated cost of buying 283 main computers (servers), 7,924 multifunctional office equipment (16 bit PC) to be distributed to the agencies, and the salary of 2,830 computer professionals. The report and the Draft Plan of the Administrative Network attracted the attention of information industry experts who carefully examined each item in the report. The government encouraged private companies to participate so as to promote information industry. The amount of KRW 760.7 billion was enormous considering the scale of governmental budget and the information industry market.

Vice-Ministers in each ministry were designated as persons in charge. The Ministry of Government Administration (MOGA) was designated as a central coordinator and the Data Communication Corporation of Korea (DACOM) was designated as an organization to design the network and provide technical support respectively. The highlight of the draft plan was the part stressing the function of coordination because there were various types of tasks and there were various ministries and agencies taking part in the administrative network project. Simply speaking, the coordination and control function should be undertaken by the Computing Network Steering Committee directly controlled by the President for some time (Seo, 2001).

It is the Administrative Computing Network Basic Plan which finalized the contents of a draft plan when it was promulgated in February 1987. After the macro-plan was determined, the basic plans for sub-projects were established. The Administrative Computing Network Basic Plan was formulated in April 1987 by the Administrative Computing Network Committee under the MOGA. The monetary network basic plan was formulated by the monetary network committee under the Korea Bank in April 1988. The education research network basic plan was drafted by the Ministry of Science and Technology (MST) and the education/research network committee under the Ministry of Culture and Education (MOCE) in September 1988.

The network project sub-plan in each area was integrated into the National Basic Computing Network Project plan by the Computing Network Steering Committee in December 1988 and it was revised and supplemented under the direction of President Roh, Tae-woo in June 1990. The National Basic Computing Network Project plan was comprised of eight supporting sub-plans: the basic plan of computing network in the five areas; the development and distribution of main (server) computers; the distribution and strengthening of 16 bit computers; software development; communication line support; standardization, inspection function development; the establishment of the measures for information protection; and the development of the operating system of the national basic computing network (MIC&NCA, 2005: 36~37).

Among the five network project plans, the Administrative Computing Network Project plan fits best in the e-Government project. It had the most powerful effect among the five

network projects aiming at realizing small and efficient government, improving public service for citizens, and utilizing the investment budget of the administrative computerization in the promotion of domestic information industry. The Administrative Computing Network Project was carried out using a top down strategy in which the Computing Network Steering Committee designated the specific project areas rather than each agency deciding on the specific project areas. In order to maximize its effect while minimizing the costs, resident registration, real estate, automobile, employment, customs, and economic statistics were designated as the six priority tasks since all of them have direct impact on the lives of citizens. The DACOM was designated as the service provider and the project began implementation in 1987 and the services were made available to citizens beginning in 1990.

The Administrative Computing Network Project, the flagship project of the National Basic Computing Network Project, started in 1985 with the six tasks in five agencies. The resident registration task, which accounted for the biggest portion among the six tasks, involved encoding the basic personal information of citizens into computers and connecting the various local level public agencies together. These sub-activities provided the foundation of the computerization of several civic affairs related to the lives of citizens.

As <Table 3-3> shows, the task of real estate management computerization was to computerize land registration, and field registration of 32 million plots of forest and real estate including land, building, airplane, and ship, and link 298 related local level agencies. The task of automobile management computerization was to computerize the process from releasing to scrapping and connect 133 related agencies. The task of customs management computerization was to computerize the process of bonded goods and import and export customs clearance and to link 109 related agencies such as customs, customs house brokers and banks. The task of employment management computerization was to computerize the tasks of job placement, management of business, and job mapping and to connect the 49 local agencies of the Ministry of Labor. The task of statistics management computerization was to computerize the 20 national basic statistics such as price, population, industrial production and to make the information available online.

The Administrative Computing Network Project involved not only the six priority tasks but also 38 existing tasks and 32 planned tasks in 29 agencies. The existing tasks developed and operated by each agency were going to be operated with connection to the six tasks after these are completed. The planned tasks which were newly added tasks apart from the existing ones were going to be brought out by each agency within the limits of the budget in each agency (MIC&NCA, 2005: 37~40).

Table 3-3 | The Six Priority Tasks of the Administrative Computing Network Project

Agency in Charge	Task Subject to the Project	Content	Service Agency
Ministry of Home Affairs (MOHA)	Resident registration management	To input the basic personal information of citizens into computer and to connect the local level public agencies online	3,700 community level agencies
	Real estate management	To computerize land, forest and field registration of the 32 million plots and to link the 298 related local level agencies	278 local level agencies
Ministry of Transportation	Automobile management	To computerize the process from releasing to scrapping and to connect the related 133 agencies	59 car registration agencies, 41 inspection offices, 16 associations of auto mechanic, 168 local level agencies
Customs Service	Customs clearance management	To computerize the process of import and export customs clearance and bonded goods and to link the 109 related agencies such as customs, customs house brokers and banks	109 agencies including the Seoul Customs, Gimpo Customs
Ministry of Labor	Employment management	To computerize the tasks of job placement, management of business place and job mapping and to connect the 49 local agencies of the Ministry of Labor	49 agencies including the Seoul National Employment Security Agency, 40 local agencies of the Ministry of Labor and 6 recruitment information centers for professional.
National Statistical Office	Statistics management	To computerize the 20 national basic statistics such as price, population, industrial production and to provide the information online	36 administrative agencies

Source: MIC&NCA, 2005: 39

2.1.3 The Second National Basic Computing Network Project and the Second Administrative Computing Network Project Plan (1992~1996)

The First National Basic Computing Network Project, a strategic pilot project in preparing for the information society, raised national interest and perception about the planned computerization, automation, and informatization, the establishment and operation of networks, and the intention to localize and standardize the computing equipment and technologies. As the results of the First National Basic Computing Network Project, the basic database of resident registration, real estate and so on were already established and operational and the technology for main host computers (middle sized servers) was partially secured, and they were produced locally. However, there were some limitations: the network operating system was unstable; Korea still depended heavily on foreign technology and equipment and there was uncertainty in securing financial resources.

For these reasons, the need to enlarge the national basic computing network, stabilize operations, increase investment, and prevent adverse effects became apparent. In terms of domestic information industry promotion, measures were required to encourage suppliers to produce and provide locally developed equipment, which has high performance and low price, encourage consumers to use the locally produced equipment, and contribute to technological independence. Therefore, the function of the Computing Network Steering Committee was strengthened, related institutions were modified and the Second National Basic Computing Network Project was advanced.

Most importantly, the second project was pushed to enlarge, modify, and develop the national basic computing network. The main contents of the second project included the selection of tasks relevant to the convenience of citizens under various agencies, stabilizing in the networks established in the first project, and enhancing co-utilization of information. The second education/research network sub-project aimed to increase the diffusion rate of computers among educational institutions, to encourage their utilization, and to raise investments in computing equipment and budget for operations. The second monetary network sub-project aimed to expand the service areas, to prepare the market, to foster computerization of co-work in the second monetary area, to utilize locally produced computers, and to introduce distributed processing. The second national defense network project aimed at utilizing locally produced computers.

To address the limitations of the first project, three broad methods were adopted. First, the second project intended to stabilize the operation of the national basic computing network. The second plan got the NCA to support the stable operation of the basic network and to connect and operate the network. Second, the second plan instructed agencies to come up with measures against adverse effects of the network. According to the instruction, the Act on Personal Information Protection was enacted and the standard of the computing network technologies was strengthened. Additionally, external monitoring institutions were introduced to the network project. Third, the pilot project for utilizing locally produced

main host computers (servers) was started, and a specialized lease company for domestic computer was established. The training programs to utilize the domestic main host computer (server) and development of software were supported, and the specialized inspection for the introduction of computer to public agencies was used.

The goal of the second administrative network project was to realize small government for citizens' convenience. To achieve the goal the second project selected new tasks which had a significant effect on administrative efficiency and the convenience of citizens, intended to continuously improve the preferred tasks of the first plan, to utilize the cost of administrative computerization into the investment of domestic information industry. The second project being divided into the preferred task, planned tasks, and existing tasks was implemented.

The seven tasks were selected as the preferred tasks based on three standards: the task has a considerable effect on administrative efficiency and citizens' convenience; the nationwide task which could provide the standard of the network project; and task which could be pushed by the agency in charge with passion. The seven tasks included national welfare tasks in the Ministry of Health and Social Affairs, postal comprehensive service in the Ministry of Post and Telecommunications (MOPT), sea-goods management in the Korea Customs Service, intellectual property information management in the Patent Office, weather information management in the National Weather Service, item list management in the Public Procurement Service, and fishing vessel management in the Fisheries Agency.

The hardware which used domestic standardized equipment and secured the compatibility with existing tasks and co-utilization of the information was installed and its related software was developed to push the seven preferred tasks project. The software development was implemented by the provider selected by the agency in charge and designated by the steering committee via the inspection of the working-level committee. Also, the support and management of the project was started from the planning stage by the NCA and the NCA did inspection before and after the project. To secure budget, the agency in charge should use internal budget and the budget was allocated to the preferred task.

The 56 tasks of the 34 agencies were designated as the planned task which were being developed or going to be developed. The 73 existing tasks of the 38 agencies which were developed already were continuously improved by the agency in charge (MIC&NCA, 2005: 50-52, Online National Archives of Korea, National Basic Computing Network Establishment Project).[11] In addition, the pilot local computerization project in local level agencies was carried out to promote computerization of local administration.

11 http://contents.archives.go.kr/next/content/listSubjectDescription.do?id=001975

2.2 Organization

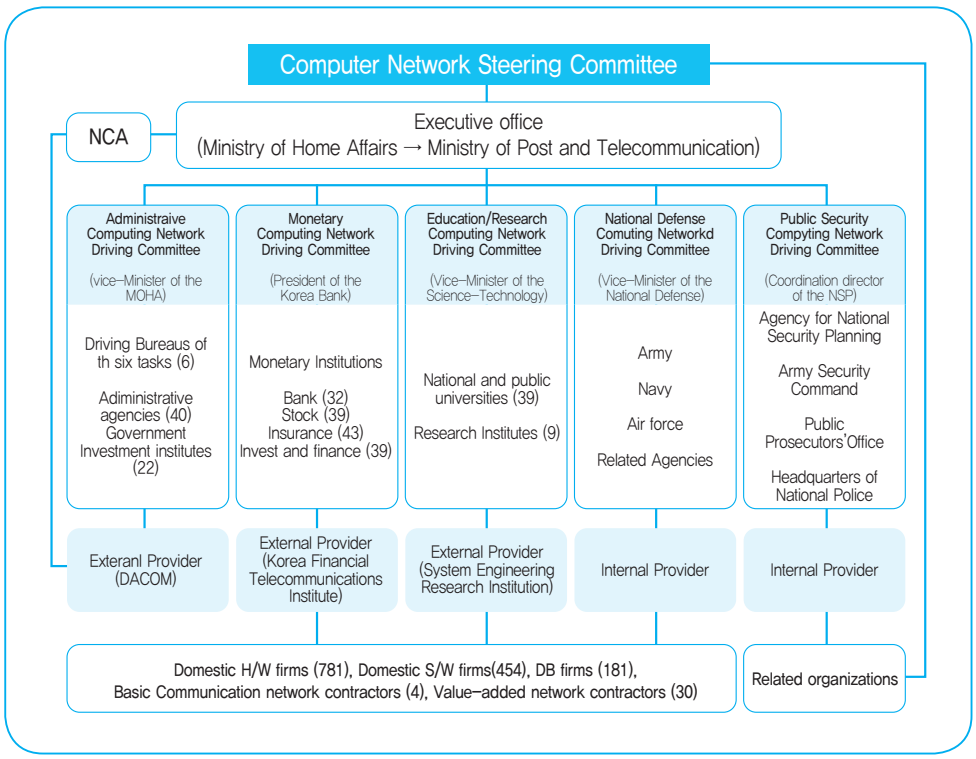
2.2.1 Computing Network Steering Committee

The national backbone network steering committee, which was organized in 1984 and prepared the National Basic Computing Network Project, was changed into the Computing Network Steering Committee because of the operation of the enforcement ordinance (implementing rules) in January 1987. The Computing Network Steering Committee maintained the status which has the direct responsibility to the President like the national backbone network steering committee. However, the chief of NCA, Kim, Sung Jin, was appointed to the chairperson of the committee not the Chief Presidential Secretary. The chief Kim, Sung Jin was appointed not because he got the doctoral degree of engineering and had a career as minister of the Ministry of Post and Telecommunications (MOPT) and the Ministry of Science and Technology (MST), but because he was evaluated as a competent person to manage the committee professionally. However, the Chief Presidential Secretary was appointed to the chairperson of the committee after the change of government in August 1988.

The Computing Network Steering Committee was organized to cooperate and coordinate between related agencies. It deliberated and coordinated the National Basic Computing Network Project Basic Plan, procurement and repayment, and introduction and development of technique and equipment. The working-level committee was operated which consisted of working level officials in the committee members' agencies in order to examine the item which would be discussed in the committee beforehand. Also, the executive office which consisted of the relevant agency (not only public agencies but also private agencies) officials and the dispatched officials from the related ministries was operated under the steering committee in order to support the practical tasks.

The user agencies of each network which were governmental agencies, financial institutions, research institutions, university, armed forces and public security agency established the five driving committees of each network to plan and coordinate the computerization of each user agency. Also, each user agency involved experts and technicians of private providers and companies.

Figure 3-1 | Organization for the National Basic Computing Project



Source: MIC&NCA, 2005: 34

The Computing Network Steering Committee was initially organized and supervised directly under the President. However, the committee was moved under the Ministry of Post and Telecommunications (MOPT) when the responsibility for informatization was transferred to the MOPT in June 1989. The Minister of Post and Telecommunications was appointed as the chairperson and the members of committee were comprised of representatives of each driving committee, the Vice Ministers of the Economic Planning Board, the Ministry of Finance, the Ministry of Government Administration (MOGA) , and the heads of Korea Bank and the NCA (MIC&NCA, 2005: 33~35).

Table 3-4 | Composition of the Computing Network Steering Committee

Period	Chairperson	Executive Office	Committee Members
1987~1989 (the early period of the 1st National Basic Computing Network Project)	Designator by the President (Chief Presidential Secretary and the chief of NCA)	Presidential Secretariat	Chief of administrative reform bureau, Ministers of the related ministries, Presidential secretaries for political affairs, economic affairs and culture-education affairs, Chairperson of the Information Industry Promotion Committee
After 1989 (the later period of the 1st project and the period of the 2nd project)	Minister of Post and Telecommunication	The Information and Communications Bureau under the MOPT	Representatives (Vice-minister) of the MST, MOPT, MOCE, Commerce-Industry, MOGA, National Defense, Home Affairs and Finance, the Agency for National Security Planning, the Economic Planning Board, the chief of Korea Bank and NCA

Source: MIC&NCA, 2005: 35

2.2.2 Other Agencies: The MOGA, MOPT, NCA, and MIC

If the Board of the Audit and Inspection (BAI) inspected the Administrative Computing Network Project to see whether it followed the regular procedure and required professional knowledge, the project could not be satisfactory. For this reason, the NCA was launched under the Ministry of Post and Telecommunications (MOPT) in January 1987 as a specialized monitoring agency in the Administrative Computing Network Project. The NCA had the roles of supporting the operation of the administrative network and standardizing related technologies as well as monitoring of the network. The Communication Promotion, a private company, was designated as a funding agency for the project in May 1986. The DACOM was designated as the service provider of the project. At that time, the MOPT was not directly related to the Administrative Computing Network Project but supervised the DACOM which implemented the project.

The Ministry of Government Administration (MOGA) established the Computing Network Steering Committee in May 1987 and its executive office in September 1987, and managed the committee until June 1989, when the managing organization of the Computing Network Steering Committee was changed into the MOPT. Thereafter, the MOPT became a stakeholder of e-Government. Afterward, the Computing Network Steering Committee

formulated the <Comprehensive Countermeasure for Information Society> in June 1990, but the committee practically lost its status and authority as a presidential committee and was abolished in March 1996 as the Computing Network Act was revised (Online National Archives of Korea, National Basic Computing Network Project).[12]

Later, the MOPT was reorganized into the Ministry of Information and Communication (MIC) by taking over the authority and task of ICT industry in December 1994. In June 1996, the MOPT formulated the <National Informatization Promotion Master Plan> and established the Informatization Planning Office which led to the third stage of Korean e-Government, the full promotion stage.

2.3 Financial Resources

No matter how good a policy is, it is of no use if it is not feasible. To increase the feasibility of a policy, securing the budget is critical. The e-Government policy in the foundation establishment stage was realized because the specific budget and strategy for securing the necessary financial resources were laid down clearly. The distinct strategy for securing financial resources in the foundation establishment stage was the "invest first and settle later," which was used from 1987 to 1992. Of course, the Informatization Promotion Fund established in 1993 was also used in the foundation establishment stage. However, it is discussed in the next chapter as it was mainly used in the full promotion stage.

The first plan, which included the specific method to secure the financial resource for the administrative computer network project, was the draft plan of the Administrative Computing Network formulated in February 1987. Before the draft plan, the specific method did not appear in the earlier reports and plans which mentioned only the required budget. For example, the plan for multifunctional office equipment (PC) distribution, announced by the Computing Network Steering Committee in January 1986, did not include the specific budget plan even though it intended to distribute 5,185 personal computers to the agencies for two years from 1986 to 1988. Moreover, the Blue House and the relevant ministries didn't include the budget item in the government budget proposal in 1985, even if the fund to carry out the plan was already needed by 1986. Therefore, the actual personal computer distribution could only be started in 1987.

In addition, the DACOM, which took charge of system design and software development in the National Basic Computing Network Project, could not secure the budget. Thus, the actual activities cannot be implemented for 2 years. Moreover, the intangible components of the project, such as software development, were excluded from the national budget implementation. However, budgets could only be allocated after deliberations according to the Act on Budget and Accounting. Thus, the previous deliberations and monitoring of budget implementation were not possible in the case of projects with intangible components, which could be evaluated after development is finished. The plan for securing the financial

12 http://contents.archives.go.kr/next/content/listSubjectDescription.do?id=002008&pageFlag=

resource was a key point which determined the success and failure of the National Basic Computing Network Project. In this context, the strategy for securing finacial resource suggested in the draft plan of the administrative computing network had a significant impact. The related part of the draft plan is as follows:

> *First, the Korean electronic communication public enterprise should invest first through the agency in charge of the administrative network (DACOM). After the administrative network is finished, it will be compensated from the governmental budget for network usage fee. Second, the agency in charge of funding the administrative network should be established and operated as a subsidiary company in order to support the cost of system development, purchase and operations.*

The meaning of the first passage is that the Korean electronic communication public enterprise will lend money to the DACOM. The DACOM will build and develop the network and the government will repay the money by using the network for more than 10 years. The meaning of the second passage is that the Korean electronic communication public enterprise will not lend money to The DACOM directly but will lend it through a subsidiary corporation. The reason why the Korean electronic communication public enterprise could not invest directly in the DACOM is because this manner of investment is a kind of financial business. According to the internal regulations of the Korean electronic communication public enterprises, it could not be involved in financial businesses.

In this regard, the Korean Telecommunication Promotion Corporation which the Korean electronic communication public enterprise fully invested was formed in November 1986. The Korean Telecommunication Promotion Corporation was established as a KRW 30 billion company. As soon as it was launched, it announced that a total of KRW 151.3 billion is going to be invested into the DACOM: KRW 7.6 billion in 1986, KRW 68.3 billion in 1987, and KRW 75.4 billion in 1988 (Seo, 2001; NIA, 2007: 95). From this point on, financing for the administrative network project was made possible. The fact that the government invested through a subsidiary corporation and repaid the company through user fees can be attributed to the expectation and belief that the establishment of an administrative network will create substantial value. It was similar to an investment by a private company and avoided the regulations of governmental budgeting institutions which operated in a strict and conservative manner.

3. Outcomes and Limitations

As a result of the First National Basic Computing Network Project, the groundwork for the First Administrative Computing Network Basic Plan was laid down. First, the first and second main host computers (middle sized servers) were developed. The first main host computer (Tolerant) relied on American technology whereas the second main host computer (TICOM) was localized. Second, fifteen thousand PCs were distributed for

the administrative computing network. Third, five units of standard software for office automation and four units for administrative work were developed. Fourth, the standard language codes for Korean and Chinese were developed and the standard PC for the administrative computing network was developed (Seo, 1994).

As the results of the First Administrative Computing Network Project, there were several outcomes in the six governmental task areas. First, in terms of the resident information management, the personal information of 5.6 million citizens were inputted into computer, and certified copies of resident registration could be issued in the 3,700 community level agencies from January 1991 regardless of their residence area. Prior to this, the certified copy of resident's registration can only be issued only in the citizen's area of residence. Second, as a result of the computerization of real estate management tasks, 3.2 million real estate registrations were inputted into computer, and all local level agencies were connected online; afterwards, citizens could see the land registration and the transfer property rights at any of the 273 local level agencies. Third, in the case of the automobile management task, the 133 related agencies were connected online and the services for citizens started in March 1990. The computerization of automobile management means that the internal administrative tasks and the procedures for citizens during the whole course from releasing to scrapping were computerized. This included various automobile related processes including the registration-related tasks such as new registration, renewal, transfer, cancellation, collateral and sequestration, the notice of the automobile inspection and its result and the individual taxi license management. Fourth, as the result of the customs task computerization, the tasks of customs formalities and bonded goods management were computerized and the 109 related agencies such as customs, customs house broker and bank are connected, then the services for citizens started in April 1990. Fifth, in terms of the employment management, the tasks of job placement, management of business place and job mapping were computerized, and the 49 local agencies under the Ministry of Labor were connected, then the service nationally started in 1990. Sixth, in case of the statistics management, the 20 national basic statistics such as price, population, industrial production were computerized, then the information was provided online from January 1991 (MIC&NCA, 2005: 37~40). In addition to the six accomplishments, Korea could develop its ability to manage and operate a mega and long term e-Government project.

As the results of the Second Administrative Computing Network Project, the resident moving in management system was integrated with the resident moving out management system, and the national service began in 1995. In 1995, the land information network was established and used in establishing the real-name land transaction system and aggregating taxes by household (MIC&NCA, 2005: 51). However, the performance of the second Administrative Computing Network Project was not as substantial as the first project since the status of the Computing Network Steering Committee was lower in the beginning of the second project and the means to secure and operate the financial resources was also changed (i.e. the investment first and settlement later strategy was abolished). After the chairperson of the committee was changed from the Chief Presidential Secretary to the Minister of Post

and Telecommunications, the meetings could not be held due to the absence of the ministers who were committee members. In addition, the Kim, Young-sam government which came to power in a period of transition from military regime to democracy focused on the political reform to clean up the vestiges of military dictatorship in its early days. Thus, the continuity of e-Government project was not secured, and the performance was also relatively poor at that time (Song&Cho, 2007: 30).

Chapter 4

Full Promotion Stage (1996~2002)

1. Background and Goal of the e-Government Policy
2. Policy Tools
3. Outcomes and Limitations

Full Promotion Stage (1996~2002)

The introductory stage (1978~1986) and the foundation establishment stage (1987~1996) in Korea were focused on the computerization of administrative task and the transfer of data and information between governmental agencies through network. It means the previous e-Government policies concentrated on the distribution and connection of hardware and the improvement of efficiency within the government agency. However, the Korean e-Government entered the full promotion stage with the first National Informatization Promotion Master Plan in June 1996. In the full promotion period, the e-Government policy focused on not only improving the internal efficiency of administration, but also increasing the convenience of citizens in using administrative services. It also focused on connecting hardware as well as advancing the work process and co-utilizing the administrative information.

In this stage, the speed of network became rapid and the high speed ICT network was distributed to most common citizens as well as the government. A systematic connection and utilization of the e-Government system and information sharing among governmental agencies were started. Thereby, information about the required goods and services of each governmental agency could be gathered on a spot. This paved the way for the realization of on-line procurement (G2B). Moreover, the two-way information exchange between the government and citizens and the provision of public services on-line (G2C) began in this stage thanks to the increased diffusion rate of computer and the wide availability of a high speed information network. This period can be divided into the two sub-periods: from 1996 to 2000 when the Ministry of Government Administration and Home Affairs (MOGAHA) and the Ministry of Information and Communication (MIC) competitively formulated the e-Government policies for the initiative of the Korean e-Government in a ministry dimension, and from 2001 to 2002 when the Presidential e-Government Special Committee formulated and pushed the e-Government policy in aspect of the pan-government.

1. Background and Goal of the e-Government Policy

1.1 Background of Policy Introduction

The e-Government policy in the full promotion period had the following context. The first context was the change of international environment. The rapid advance of information technology, with the American Silicon Valley as the center in 1990s, accelerated entry into the information society by facilitating the establishment of high speed information networks. Starting in the 1990s, the full-fledged e-Government was started to push in the U.S., Japan, the U.K. and other development countries.

The second one was the organizations, human resources and legal framework of the previous governments which affected the entry into the full promotion stage and the macro direction of the stage. In terms of organizational basis, the two ministries still took the lead in e-Government after the Ministry of Government Administration (MOGA) which played a leading role in the introductory stage was changed to the Ministry of Government Administration and Home Affairs (MOGAHA) and the Ministry of Post and Telecommunications (MOPT) which played a leading role in the latter part of the foundation establishment stage was reorganized into Ministry of Information and Communication (MIC). In terms of human resource base, the most technocrats, who had confidence in the future information society and were allocated to the key positions in the informatization and e-Government pushing organizations during the previous two periods, still performed the informatization and e-Government task despite the change of the government and the reorganizations. In terms of institutional base, the Framework Act on Informatization Promotion (1995), enacted in the latter part of the foundation establishment stage, became the legal foundation of the National Informatization Promotion Master Plan.

The third background was the interest of the presidents in informatization and e-Government. The President Kim, Young-sam started to show an interest in informatization through the advice from technocrats after the symbolic and visible political reform such as military reform and government officials' property registration in his early days in the Blue House. The President Kim, Dae-jung showed interests in informatization and e-Government in his early days in the Blue House. He directed to rearrange the existing informatization and e-Government organizations and formulate informatization and e-Government policy after the foreign exchange crisis was overcome.

1.2 Goal and Strategy

The orientation of the e-Government policy in the full promotion stage was to realize a small but efficient government. It means that the meaning of e-Government was changed from "a supporting tool to increase administrative efficiency by utilizing information technology" to "an instrument to realize the small but strong government" by amending limitations of the former e-Government stages and learning from the e-Government cases

of the developed countries. The goal could be interpreted as the will to drive administrative reform by actively introducing information technology to the public sectors in order to respond to and effectively perform the increasing governmental function with a small government.

The previous stages had two broad limitations. First, improving the convenience of public service for citizen was relatively insufficient because the administrative informatization had focused only on making the internal task efficient. Second, there was a lack of strategy to organically link the administrative informatization with the administrative reform and to simplify administrative task procedures.

Four specific objectives were set to resolve these problems and realize the small but efficient government. The first objective was to provide public services for citizens through an online single window (G2C). The second was to build up the e-commerce system between the government and business (B2B). The third was to maximize productivity and transparency in the process of internal task of the government (G2G). The fourth was to diffuse the usage of electronic signature and to build up the integrated computing network system within the government in order to secure safety and reliability of information distribution and management.

The four strategies used in the full promotion period were as follows: The first strategy was to establish the e-Government command center and enhance its position; the second one was to push e-Government as a tool of administrative reform and main activity of national informatization; the third was to operate the Informatization Promotion Fund; the fourth strategy was to push the e-Government project with eleven activities under several ministries within a short period.

As the first strategy, the e-Government Special Committee was organized as an e-Government command center in January 2001. In the early and middle parts of the full promotion stage, the e-Government plans were overlapped each other because the Ministry of Government Administration and Home Affairs (MOGAHA) and the Ministry of Information and Communication (MIC) competitively tried to gain the initiative of e-Government policy. The competition between the two ministries was caused because the Informatization Promotion Committee which handled the national informatization could not sufficiently coordinate and mediate. This happened as the committee had to deal with not only e-Government policy but other informatization policies such as establishment of information network. Thus, apart from the Informatization Promotion Committee, the e-Government Special Committee was organized under the Presidential Committee on Governmental Innovation and its position was enhanced by reporting to the President via the Senior Presidential Secretary for Policy Planning every week or every other week.

As the second strategy, e-Government was pushed as a main activity of the national informatization and as a tool of administrative reform. It was because the influence of the shared and diffused data and information within the government on the whole society was very considerable. The reason why e-Government was considered to be an instrument of

administrative reform was that e-Government could contribute to the improvement of task processes and transparency in administration beyond efficient administration.

As the third strategy, the Informatization Promotion Fund was used to support the related companies in introducing and developing the IT equipment and software required for e-Government. This fund was operated by lending the money for the technology development, which nationally required but could not borne by only a company due to the high risk and large scale of investment, and holding the technology as collateral.

As the fourth strategy, the e-Government projects in this stage were intensively conducted by several ministries within a short period because <A Strategy to Realize e-Government in order to Advance into a First Class Country (The First e-Government Plan)> was formulated in the late period of the Kim, Dae-jung government. There are several methods to push e-Government projects. However, the method selected significantly affects the attainment of the project's goal. For example, an information system can be established within a long period of time to minimize mistakes and errors, or it can be intensively developed within a short time which is more risky. However, enormous costs may be required or the system may need to be redesigned if the project planning or system design is not right (BAI, 2003: 180). The First e-Government Plan had this risk in some degree.

2. Policy Tools

2.1 Legal Framework and Projects

The major projects in the full promotion stage can be divided into two categories by period. From 1996 to 2000, the e-Government projects were pushed as a sub-project of the informatization policy with the Ministry of Government Administration and Home Affairs (MOGAHA) and the Ministry of Information and Communication (MIC), which competed each other for the initiative. From 2001 to 2002, the e-Government projects were led by the e-Government Special Committee as a tool of administration reform. In the first period, the MIC formulated the first and second National Informatization Promotion Master Plans (NIPMP) and the MOGAHA formulated the e-Government Vision and Strategy and the Comprehensive e-Government Action Plan. In the second period, the First e-Government Plan, the full title of which is “A Strategy to Realize e-Government in order to Advance into a First Class Country,” was formulated and implemented.

Table 4-1 | Major Projects in the Full Promotion Stage

	e-Government as a part of the informatization policy (1996~2000)		e-Government as a tool of administrative reform (2001~2002)
Leading Organization	MOGAHA	MIC	e-Government Special Committee
Legal framework	Framework Act on Informatization Promotion (1995)		e-Government Act (2001)
Major projects	- e-Government Vision and Strategy (1998) - Comprehensive e-Government Action Plan (1999)	- The 1st NIPMP (1996) - The 2nd NIPMP (1999)	The 1st e-Government Plan (2001)

2.1.1 Framework Act on Informatization Promotion (1995)

The Framework Act on Informatization Promotion was enacted in August 1995 and enforced in January of the following year. According to the article 1 of the Act, the government should formulate the National Informatization Promotion Master Plan to foster informatization. The act directed the formulation of public sector informatization plan (e.g. the e-Government plan) by enforcing the National Informatization Promotion Master Plan to include the guideline for the informatization promotion of public, local, industrial and living areas. The first and second National Informatization Promotion Master Plans were formulated in the full promotion period and the third, fourth and fifth Master Plans were also formulated in the advanced period based on the act.

2.1.2 The 1st and 2nd National Informatization Promotion Master Plans (1996~1998, 1999~2000)

In June 1996, the Ministry of Information and Communication (MIC) formulated the first National Informatization Promotion Master Plan by integrating the each ministry's plan according to the Framework Act on Informatization Promotion. The ultimate objectives of the first plan were to informatize public sector, industry and individual life, to link the every governmental agency, educational institute, library, research institute, enterprise, hospital and household together through high speed network and to connect the network with the global network in order to easily access and utilize the domestic and foreign information.

This plan set up goals and strategies to promote informatization until 2010 and outlined the main tasks which should be implemented during the first planned period from 1996 to 2000. This plan had the government provide budget, staffing, and technical support to the

10 priority tasks which had a significant impact and could be realized by 2000 to establish foundation for the information society. The related government agencies planned sub-activities related to the 10 priority tasks and included them in the Informatization Promotion Implementation Plan.

The first priority task was "to realize a small but efficient government" which was the e-Government project in the 10 priority tasks. The reason why the e-Government related task was chosen as the first task was because the informatization of government had strategic importance in promoting the national society informatization. The e-Government task could be divided into three:

First of all, by the year 2000, the scope of one-stop public services as well as home-based public services should be expanded through PC and telnet. Also, the automobile affairs network should be established, electronic ID cards should be issued and the network of different functional agencies which are in charge of medical insurance, employment insurance, national pension, national and local taxes, and automobiles should be connected by 1998 in order to decrease citizens' inconvenience in submitting their basic personal information certificates to agencies repeatedly. Second, a system of co-utilizing information should be established in order to open and share information. Third, one personal computer should be distributed to each government official by the year 2000 and the high speed network connecting administrative agencies, legislature, and judiciary should be built (MOPAS&NIA, 2008: 87-89).

The First Basic Plan National Informatization Promotion Master Plan was ended in 1998, two years earlier than originally planned because of the implementation of the Second Master Plan, Cyber Korea 21. After the Ministry of Government Administration and Home Affairs (MOGAHA) set the e-Government vision and strategy in 1998, the MIC proposed more specific e-Government activities by formulating the Cyber Korea 21 apart from the e-Government Vision and Strategy. However, the Cyber Korea 21 also did not have specific implementation strategy and long-term vision and objectives because the Administrative Informatization Implementation Plan had been formulated from the annual plans of each agency without organic interagency coordination.

Therefore, after recognizing these problems, the government organized the Presidential e-Government Special Committee on January 30, 2001. The e-Government Special Committee was established as a special committee under the Presidential Committee on Governmental Innovation. Nevertheless, it was operated as an independent temporary organization while the Presidential Secretary for Policy took the position of a co-head of the supporting team for actual work (Chung, 2009: 89-90).

2.1.3 e-Government Vision and Strategy (1999~2002), Comprehensive e-Government Action Plan (1998~2002)

The e-Government Vision and Strategy was formulated by the Ministry of Government Administration and Home Affairs (MOGAHA) in 1998 by integrating and supplementing the existing ideas and discussions of e-Government. The ministry started the preliminary work to realize e-Government in 1997, when it was still the Ministry of Government Administration (MOGA), and finished the draft of the e-Government vision and strategy in March 1998. Afterwards, the ministry opened the draft plan to the public and solicited comments and opinions to set a model suitable for Korea and reported the e-Government Vision and Strategy to the President on 21 May 1998. The e-Government Vision and Strategy was adopted as the national informatization policy after the deliberation of the Informatization Promotion Committee (Chung, 2009: 85).

The e-Government vision and strategy developed e-Government through three steps and completed it by 2002 according to the plan. The first step was preparing the environment until 1999; the second step was establishing an integrated network until 2001; the third step is the e-Government operation by 2002.

1st step: the objectives of the first step were to develop a pilot system which would provide convenient public services combining the existing administrative database and build-up the government intranet. To achieve these, an electronic approval system should be installed in government ministries and an e-mail system should be operated among ministries. In addition, the legal framework such as the Information Resource Management Act and institutions such as Chief Information Officers should be arranged. The business process reengineering (BPR) model for administration should be developed.

2nd step: the second step intended to establish an electronic document distribution system and involved diffusing the pilot system which was developed in the first step and developing the electronic data interchange (EDI) system for electronic approval among agencies and fully operating the electronic approval system.

3rd step: the third step aimed at realizing a transparent and open information system through digitalizing public services and developing the electronic approval system between public and private agencies. Furthermore, this step planned for a global information network based on intranet and internet connecting Korean expatriates, overseas enterprises, and the executive agencies.

Table 4-2 | The 6 Areas and 18 Activities in the e-Government Vision and Strategy

	1st Stage Preparing the environment	2nd Stage Establishing integrated network	3rd Stage e-Government Operation
Administrative Service	- e-Government demand survey - Administrative service system establishment - Pilot service operation (Internet government policy forum open)	- Developing a delivery tools of public services - Opening administrative information to the public limpidly - One-stop service	- Digitalizing application and registration - EDI system operation between private and public sectors - Non-stop service
Administrative Task	- Current state of paperless administration and its feasibility analysis. - Dematerialization of documents - Distribution of electronic document - Online connection of overlapped task among agencies	- Exchanging electronic document between central and local governments - Business process reengineering (BPR) - Diffusing the pilot e-Government task	- Establishing the integrated administrative task system - Building up the supporting system for policy decision making
Administrative Information	- Surveying and classifying co-using information - Existing administrative D/B connection - Establishment of the Information co-using center	- Integrated D/B establishment - Integrated management of information resource - Digitalizing information	- Building up pan governmental administrative information management system

	1st Stage Preparing the environment	2nd Stage Establishing integrated network	3rd Stage e-Government Operation
Information Technology	- Resolving Y2K - Diagnosing and redesigning the administrative information infrastructure - Central government intranet establishment - Standardization of electronic document	- Expanding the administrative Information network - Expanding the intranet to local level - Using electronic signature	- Establishing global information network
Organization/ Human resource	- Increasing the informatization ability of public servant - Securing the organization and employee in charge - 1 PC per 1 public servant	- Distributing e-mail address to public servant	- Distributing the e-card to public servant
Law / Institution	- Institutionalizing the information co-utilization - Strengthening document manage system - CIO operation - Reorganizing information security - related-law	- Performance evaluation system operation - Rearranging the Law and institution for One-stop, Non-stop service - Enacting information resource management	- Advanced institution introduction from the developed countries

Source: MOGAHA, 1998: 39

The six areas of the Koreanized e-Government model consisted of realizing customer-oriented public service, redesigning the administrative tasks, promoting co-utilization of administrative information, polishing the information technology infrastructure, increasing the productivity of individual public servants and improvement of institutions. The six areas of the e-Government model intended to provide convenient public service for citizens, reduce the administrative regulation and intervention on businesses, and decentralize the central government. According to the Ministry of Government Affairs and Home Affairs

(MOGAHA), the concept of Korean-type e-Government may be described a future-oriented innovative administrative model where all administrative processes are computerized for high-productivity and everyone can easily access government information and service anytime, anywhere (Oh, 2010: 175-176).

The Comprehensive e-Government Action Plan was formulated based on the article 45 of the e-Government Act which mandated the preparation of a medium and long-term e-Government project plan. The action plan aimed at realizing 21st century-oriented knowledge information society e-Government where high-quality public services are offered through administrative reform by using information technology. To realize the e-Government, the contents of the action plan included advancing public service and raising administrative productivity and transparency.

First, to advance public service, the "one-stop and non-stop service" involving application and issuance of certificates was realized at local level agencies. Second, to raise administrative productivity, the government derived the type of document which could be distributed electronically from the BPR by August 1999 and realized an administration where the governmental documents are electronically produced and distributed from 2001. The time to process documents was shortened significantly when the distribution of electronic documents among agencies was put into operation in the second half of 2000. The government increased efficiency of information resource management by consolidating the administrative information which was managed by more than two ministries and ensuring the compatibility of data and systems and supporting co-utilization of information. Finally, in order to improve transparency, the government electronically produced administrative information; established the foundation for electronic information openness by building the database and network for this information; allowed citizens to conveniently access and use the information through internet, kiosks, and telephone; provided petition-related information in one section by establishing the petition handling system via the internet in 2002.

The Comprehensive e-Government Action Plan was pushed as a Five-Year Plan from 1998 to 2002 including six areas and 33 activities to realize the e-Government discussed above (Online National Archives of Korea, Comprehensive e-Government Action Plan).[13]

2.1.4 e-Government Act (2001)

In March 2001, the government promulgated the "Act on Promotion of Computerization of Administrative Tasks to Realize e-Government" (e-Government Act), Law No. 6933 and implemented it beginning in July 2001. The purpose of the e-Government Act is as follows:

13 http://contents.archives.go.kr/next/content/listSubjectDescription.do?id=001964&pageFlag=A

> *"Article 1 (purpose) this Act aims at fostering the project for e-Government by regulating the basic principle, procedure, and method for electronic processing of administrative tasks and raising people's quality of life by increasing productivity, transparency, and democracy of administrative agencies."*

The goal of e-Government is not only to reduce the cost of government operations (the government improves internal productivity) but also provide public services to citizens at low cost (government improves external productivity). These are the basic goals but there are other more fundamental goals. These include allowing the public to see what is happening within the government in a convenient manner (improvement of transparency), and allowing them to have more influence in democratic governance. And most importantly, the purpose of e-Government implementation is ultimately to promote the welfare and improve the quality of people's lives in the knowledge information society (Huang&Chung, 2002: 285).

The e-Government Act consisted of 7 chapters and 52 articles and 1 supplementary provision. The main contents are as follows: first, the second article mandated the constitutional bodies such the National Assembly, the Judiciary, the administrative offices, to digitalize their administrative tasks using information technology. The article 6 outlined the necessary principles for e-Government implementation and operation. The article 16 mandated governmental agencies to take advantage of and utilize electronic documents based on the appropriate format. The article 20 mandated the use of electronic seal in electronic official documents and use of e-signature based on the e-Signature Act in electronic transactions. The article 24 mandated the reorganization of existing organizations and business processes and amendment of laws and institutions to introduce information and communication technology. The article 30 mandated public officials to work and get education and training so that they could use information and communication network. The article 33 enabled the e-documents to be used even if the relevant laws required paper documents. The article 34 mandated the government to reorganize the relevant institutions and to set-up the operation plan of online petition portal in order to handle petitions without having to visit the administrative agencies. The article 40 mandated the government to prepare plans to reduce paperwork to simplify the decision-making process, applications, reports, and notices and formulate and carry out their implementation plan. The article 44 mandated the government to organize a committee to reduce paperwork under a central government agency and the committee to carry out paperwork reduction and deliberate the related processes. The article 51 allowed two or more municipalities to establish an association in order to jointly pursue informatization projects (MOPAS, 2010: 17-18).

2.1.5 A Strategy to Realize e-Government in Order to Advance into a First Class Country (The First e-Government Plan) (2001~2002)

At the end of October 2002, the e-Government Special Committee selected 11 activities which were divided into three areas from the perspective of users not providers of public services: service improvement for citizens and businesses (front office), growing administration productivity (back office), and infrastructure establishment. The importance of the activities was reported directly to the President and subsequently approved as a presidential project which the Senior Presidential Secretary for Policy Planning frequently supervised and coordinated. The goals and expected results for each activity are summarized briefly as follows (Chung, 2009: 93-97).

Table 4-3 | The 3 Areas and 11 Activities in the 1st e-Government Plan

Area	Activity
Service improvement for citizen and business (Front Office)	o Establishing a single window portal for civil petitions (G4C) o Connecting the four social insurance information systems o Building up a comprehensive e-Procurement system (G2B) o Providing an integrated e-tax service (Home Tax Service, HTS)
Growing Administration productivity (Back Office)	o Establishing a national finance information system o Informatizing local level administration o Building up a national educational administration information system (National Education Information System, NEIS) o Building up a standardized human resource management system (Personnel Policy Supporting System, PPSS) o Diffusing e-approval and e-document
Infrastructure establishment	o Building up a governmental seal system and diffusing the private e-signature o Setting a pan governmental integrated computing environment

a. Establishing a Single Window Portal for Civil Petitions (G4C)

At that time, citizens had to visit public offices several times and bring required documents to get their civil petitions done. Public servants also had to request needed information from other agencies by sending official documents or visiting these agencies. The goal of this activity known as G4C (Government for Citizens) was to increase the convenience of citizens by shortening the number of times to visit governmental agency and reducing the required paper documents. This activity required to develop an information sharing system of the five national main databases such as resident, real estate, automobile, businesses, and tax databases. In addition, the goal also included the enhancement of the transparency and democracy of the administration by providing administrative information, soliciting public opinion, and attending civil petitions through online portals.

b. Connecting the Four Social Insurance Information Systems

The goal of this activity was to increase the efficiency of the management and operation system of the four social insurance and to increase convenience of citizens by combining the information resources of the four social insurance networks. After this activity is completed, the four kinds of social insurance service can be available for citizen at any insurance agency regardless of the type of insurance agency.

c. Building up a Comprehensive e-Procurement System (G2B)

The goal of this activity also known as G2B (Government to Business) was to primarily innovate the internal administrative procedures related to procurement by allowing the processes from company registration, bidding, contracting, and payment to be conducted online. The establishment of this system could greatly enhance the transparency of the public sector transactions and the efficient procurement administration by including reducing administrative cost. In addition, this activity intended to make procurement-related information available and allow participation in the bidding process with only a single registration in a single portal. It allowed companies as well as government to cut procurement related costs.

d. Providing an Integrated e-tax Service (Home Tax Service, HTS)

The Home Tax Service system refers to internet-based national tax service where all tax activities including not only filing but also billing, and payment are processed online and information is retrieved anytime by taxpayer. After launching this service system, taxpayer can handle tax affairs online at home or at work without visiting the tax office and bank.

e. Establishing a National Finance Information System

The goal of this activity was to deal with the settlement, management tasks of funds and assets, and debts in an integrated manner based on bookkeeping by double entry and accrual basis and to provide electronic notices, payment, and transfer service by establishing the integrated information system of national finance.

f. Informatizing Local Level Administration

This activity had been pushed earlier than the other activities. The government pushed the integrated informatization of 21 tasks at the local administration level by 2002. Its goal was to improve administrative productivity and public service by sharing the administrative information and launching internet-based public services.

Before this activity, the Ministry of Government Administration and Home Affairs (MOGAHA) already finished connecting the individual administration network of 10 of the 21 tasks such as land registration, health and welfare, rural residents, the local industry, the environment, petitions, resident, automobile, finance and tax, and building construction from 1998 to December 2000 and then in order to provide the relevant public service regardless of residence area and to establish kiosk-based certificate issuance systems. Based on the 10 completed tasks, the other 11 tasks such as regional development (local development, road

transport, culture and sports, animal husbandry, fisheries, water bodies, forest, disaster, civil defense, irrigation, internal administration) were informatized at the local agency level.

g. Building up the National Education Information System (NEIS)

This activity intended to establish online distribution system for educational administration information connecting the 10 educational tasks such as education, personnel, and finance by linking the education offices in the 16 provinces and cities with the other educational institutions.

According to the report of the Ministry of Education and Human Resource Development to the President, after establishing this system, the ministry predicted that teachers could deal with several administrative tasks using computers rather than pen and paper and citizens could apply for the issuance of certificate of graduation, enrollment, and grades and so on. Also the students' parents could see the information regarding the progress in the curriculum, transcripts, guidance, and physical development, and consult online.

h. Building up a Standardized Human Resource Management System

This activity, known as PPSS (Personnel Policy Supporting System), was originally a project of the Central Personnel Committee. After organizing the e-Government Special Committee, the Central Personnel Committee requested this activity to be included in the 11 activities. The three goals of this activity are as follows:

First, this activity provides the information needed for determining the human resource requirements of each department and assigning the suitable personnel to the appropriate position as needed by allowing the head of the agency to check the personal information of all employees. Second, this activity allowed the personnel director to process the related tasks such as personnel evaluation, salary assessment, gauging training requirements through computer and network. Third, the individual civil servant can search and amend their personal information anytime. Fourth, the efficiency, transparency, democracy of personnel administration could be improved by ensuring the timely provision of personnel-related statistics.

i. Diffusing e-approval and e-document

This activity laid the groundwork for realizing paperless government. The reason why this activity was included in the 11 activities, even though the electronic approval project had already been implemented by each ministry, was that there was a considerable discrepancy in the electronic approval rate among agencies and different agencies used different groupware, which caused compatibility issues.

Each authority's document approval needed to be standardized. In addition, the infrastructure was needed to be built in order to circulate complete documents. Therefore, the rate of electronic approval should be raised and the standardization of electronic documents should be established. Also, the full document should be digitalized because only the document cover had been digitalized before this activity.

j. Building up a Governmental Seal System and Diffusing the Private e-signature

The certification system of e-signature was dualized into the GPKI (Government Public Key Infrastructure) and NPKI (National Public Key Infrastructure). In the public sector, the administrative e-signature was distributed to every public servant to ensure the effectiveness of diffusion of e-documents and e-approval. It led to the early settlement of e-Government by establishing the governmental information protection system including the identification of public servant and the security of e-document. In the private sector, the accredited certificate was used for the financial and commercial transactions. This activity intended to increase the number of accredited certificate users to 10 million by 2002. The reason why the certification system of e-signature was dualized was because the Ministry of Government Administration and Home Affairs (MOGAHA) newly regulated the administrative e-signature certification system for the government with the enactment of e-Government Act after the Ministry of Information and Communication (MIC) already established the certification system of e-signature for the private commercial transactions.

PKI (Public Key Infrastructure) is an arrangement of hardware, software, policies, and procedures which allows an e-document receiver to know the sender' identity and to prevent forgery and denial of the fact that a person sent an e-document through the correspondence between a private key and a public key. A private key is owned by a user while a public key is issued and managed by a certificate authority (CA) (Kim, 2007: 525).

k. Setting the Pan Governmental Integrated Computing Environment

Due to disagreement among the ministries, this activity started late. This activity intended to reduce manpower and budget and improve computing support by integrating the operations of computer rooms which had been established and operated by the different agencies. For example, the ministries in the Gwanghwamun government complex separately operated their computing rooms even though they were in the same building. Thus, the system integration among ministries was practically impossible and there was a limitation of budget in allocating computer professionals to each ministry.

2.2 Organization

2.2.1 Informatization Promotion Committee

With regards to the e-Government project, the need for a coordinating organization among ministries was raised from the period of the Second National Basic Computing Network Projects, as informatization related to more than two ministries began and the focus of e-Government was changed from computerization to information sharing among ministries. Establishing e-Government by ministry has the merit of decentralization; on the other hand, it also presents some problems such as overlapping investments, lower priority of informatization, and the limitations of information sharing between ministries. In the 1990s, the argument that the organizations for e-Government should be rearranged

due to the inactive role of the Computing Network Steering Committee and the rivalry among ministries. For these reasons and the First High-Speed Broadband Network Project (1995~1997), the government established the MIC as a specialized ministry in informatization in 1994 and the Informatization Promotion Committee in 1996 based on the Framework Act on Informatization Promotion enacted in 1995. Thus, the Computing Network Steering Committee whose members were vice ministers was replaced by the Informatization Promotion Committee whose members were ministers (Soh, 2009: 200~202).

The Informatization Promotion Committee consisted of 25 members. The head of committee was the Prime Minister, the vice head was the Minister of Finance and Economy, and the assistant administrator was the Director of Office for the Government Policy Coordination under the Prime Minister. The members of the committee were appointed by the head of the committee among the Secretary General of the National Assembly, Court Administrator, and the chiefs of the relevant agencies. In addition to the regular members, there were also advisory members according to the Framework Act on Informatization Promotion. The Informatization Promotion Committee deliberated the annual informatization promotion implementation plan, coordinated informatization promotion policy and projects, and determined the National Informatization Promotion Master Plan, which contained the main direction of the informatization policy in public, local, and industrial area and the foundation establishment, technology development, and training of information and communication industry. The Informatization Promotion Committee was the highest organization for informatization among the relevant institutions (Chung, 2009: 40).

However, the Informatization Promotion Committee had limitations in pushing e-Government projects and coordinating ministries since the committee took charge of not only e-Government, the informatization of the public sector, but also the informatization policy in several other areas. Also, the committee's political authority and its authority to allocate budget and enact the law were weak as it was a deliberating council. In terms of budget authority, the committee could not directly operate the Informatization Promotion Fund but could only deliberate its operating policies. It was difficult for a committee, which cannot allocate budget, to coordinate among ministries. Of course, the financial resources for national informatization were supplied not only from the fund but also from the general account budget because the national informatization needed plenty of financial resources. However, the committee had limitations on meeting ministry demands for the general account budget since there was no legal basis for the budget organization to reflect the budget requirements of the committee (Soh, 2009: 203). For these reasons, the Informatization Promotion Committee could not manage the conflicts among ministries. The Ministry of Government Administration and Home Affairs (MOGAHA) and the Ministry of Information and Communication (MIC) competed for e-Government initiatives, so the e-Government Special Committee was established.

2.2.2 MOGAHA and MIC

As the Ministry of Government Administration (MOGA) and the Ministry of Home Affairs (MOHA) were merged into the Ministry of Government Administration and Home Affairs (MOGAHA) in 1998, the administrative computing department under the MOGA was renamed the Administrative Information Department. The MOGAHA believed it had the initiative for e-Government because the MOGA played a leading role in the introductory period and the nature of the e-Government policy was about the internal government tasks. Thus, the MOGAHA formulated the e-Government Vision and Strategy in 1998 and the Comprehensive e-Government Action Plan in 1999.

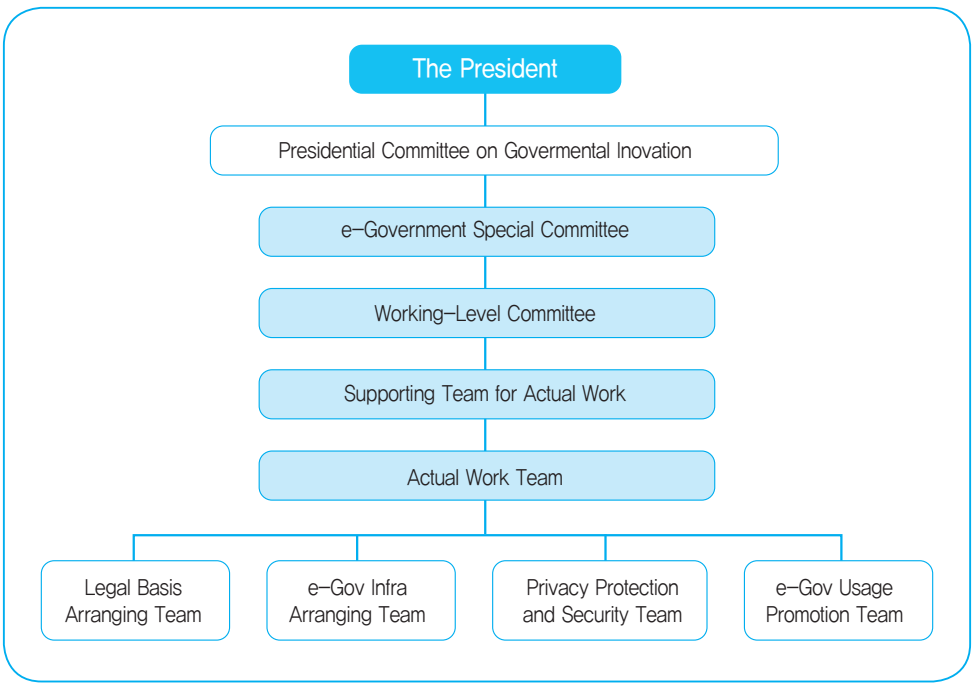
However, the Ministry of Information and Communication (MIC), which was formerly the Ministry of Post and Telecommunications (MOPT), believed it should take a leading role in e-Government because the MOPT was appointed as head of the Computing Network Steering Committee in June 1989 and the MOPT operated the committee and the e-Government is a sub-project of the National Informatization Project. Therefore, the MIC formulated the First National Informatization Promotion Master Plan in 1996 and the Second National Informatization Master Plan in 1999.

The four plans formulated by the two ministries had overlapping sub-projects and were criticized for the lack of specific implementation strategy as they were competitively formulated in less than four years. Also, the fact that the ministry had limitations on pushing the pan-governmental project without strong leadership was criticized. For these reasons, the e-Government Special Committee was established in 2001.

2.2.3 e-Government Special Committee

There was no strong organization to present a new vision and strategy for e-Government from 1997 when the foreign exchange currency crisis occurred, to 2000 when the crisis ended. However, in the later period of the Kim, Dae-jung government, the government organized the e-Government Special Committee to push for the First e-Government Plan which consisted of 11 activities. Apart from the Informatization Promotion Committee, the e-Government Special Committee specialized on e-Government. It was launched to resolve the problems which the existing committee had in improving the quality of administrative processes and public service (Chung, 2009: 90). The e-Government Special Committee, established in January 2001, was organized at the vice minister level (i.e. its governmental members were vice ministers) and it was a temporary committee under the Presidential Committee on Governmental Innovation. It had autonomy and discretion in actual operations even though it was under the Presidential Committee on Governmental Innovation as it has a reporting channel to the President via the Senior Presidential Secretary for Policy Planning.

Figure 4-1 | The Structure of the e-Government Special Committee



Source: e-Government Special Committee, 2003: 59

The e-Government Special Committee consisted of 17 members: 10 members from the government and 7 members from the private sector. The former includes the Presidential Secretary for Policy (later changed into the Presidential Secretary for Planning and Coordination),[14] the Vice-Ministers of the MOGAHA, MIC, Ministry of Planning and Budget, Finance and Economy, Education and Human Resource, Health and Welfare, and Labor, the Vice-Mayor of Seoul Metropolitan City, and the Economic Coordinator of the Prime Minister's Office. The special committee, launched on February 2001, selected the 11 activities and formulated the <First e-Government Plan> which was reported to the President in May 2001. The selected 11 activities were comprised of four front-office activities, four back-office activities, and three e-Government infrastructure activities. Afterwards, the committee started implementing the 11 activities in December 2002, finished the final report in November 2002, and operated until January 2003. During the operation period, the committee played active roles: it selected and supervised the 11 activities, and coordinated and advised the related ministries through three presidential reports, eight plenary sessions,

14 There was a discussion to decide who between the Presidential Secretary for Policy and the Presidential Secretary for Planning and Coordination will be a member of the special committee as the existing member, Kim, Young-joo (the Presidential Secretary for Policy) was appointed to the Presidential Secretary for Planning. As a result, the committee determined that the Kim, Young-joo should remain in the committee even if his position changed in order to maintain business continuity.

and fifty one working-level meetings. Especially, the working-level committee, which was comprised of the private committee members and the directors of the relevant ministries, played a role to coordinate among ministries, supervised the activity schedules, and removed barriers and constraints (Chung, 2009: 92-93).

The e-Government Special Committee actively pushed the multi-ministry e-Government activities by virtue of its authority from the President even if the committee didn't operate for a long time. The private sector head of the special committee led the working sessions with the MIC (technical support and distribution of the Informatization Promotion Fund), the Office of Planning and Budget (government reforms, budget allocation), and the MOGAHA (organization management, local government management) in order to secure administrative, financial, and human resources, which are the main factors of the multi-ministry project (Chung, 2009: 456-457).

A Virtual Interview with the Former Chairman of the e-Government Special Committee, Ahn, Moon Suk

[Profile] 1978, The head of the computing system development of KAIST; 1981~2010, Professor of the Department of Public Administration, Korea University; 2001~2002, The Chairman of the e-Government Special Committee; 2011~Present, Professor Emeritus of Korea University; A co-chairman of the Forum for Future Contents Strategy

■ The e-Government Special Committee achieved excellent results despite its short two year period. What do you think the success factors were?

In fact, the actual activity period of the committee for the eleven e-Government activities was just a year and five months. The project needed to be completed by October 2002 to avoid a political conflict because there was a presidential election in December 2002. We had only a year and five months after the first report to the President in May 2001. A spirit of self-sacrifice and commitment from the committee members were sincerely needed. For this reason, as a leader, I frequently stressed the need for teamwork. I promoted a strong bond and fellowship among the members. For example, I said "we are a commando unit whose fate depend on establishing e-Government of Korea" while I was watching the members entering on one snowing dawn.

The reasons why the committee achieved successful outcomes were the system of assigning responsibility to the ministry and the selection of concentration areas. First, for the system of assigning responsibility to ministry, the vice-minister members were given specific duties and responsibilities for the e-Government project. The committee made each vice-minister directly report the activities related to her or his ministry

to the President and hold press briefings. Especially, the committee had the vice-ministers announce policy decisions at the working-level meetings and the plenary sessions to encourage participation and responsibility. Even proxy attendance was not allowed at the plenary session. Therefore, the e-Government policy of a certain ministry was a commitment of not only the vice-minister but also the ministry, and the policy was reported to the President by the vice-minister. As the vice-minister reported it to the President, the minister was required to attend the reporting session to hear the presidential comments and instructions. The public relations for e-Government projects were handled not by the committee but by each ministry. The committee avoided becoming a target of political attacks. So it made the ministries take the responsibility for projects and public relations and the committee acted as a 'shadow'. Second, choosing areas of concentration was used as a strategy, since the committee was temporary and the project began at the end of the Kim, Dae-jung government. The committee selected 11 activities which could not be pushed without its intervention.

■ What was the focal points in operating the committee?

At the beginning of the committee, the important roles I had to play as a chairman were to secure technical support and to effectively coordinate the different opinions among ministries. For these reasons, I suggested two conditions. I asked the government to appoint the chief of NCA as a co-chief of the working-level committee to secure technical support, and I suggested the Presidential Secretary for Policy to take part in the committee as the other co-chief of the working-level committee in order to coordinate ministries. Fortunately, the two demands were met.

During the course of e-Government project, I recognized three main priorities which were: to secure financial resources, to amend laws and regulations, and to standardize technology. Above all, the most urgent needs for the first year of the project were to select specific areas of the project and to secure financial resources. The first process was to verify the validity of the project through Information Strategic Planning (ISP). A considerable portion of the project's expenses was supported from the Informatization Promotion Fund which was quite flexible. Full support from MIC and NIA was very helpful in accessing the Informatization Promotion Fund. They helped the e-Government project of the special committee become a project of the Informatization Promotion Committee by formally reporting the e-Government project to the Informatization Promotion Committee. Second, it was also important to amend e-Government related laws and regulations. Thus, the committee formed a task force to request the cooperation of the National Assembly. The task force reported to the e-Government special committee of the ruling party (it was different from the e-Government Special Committee under the President) and discussed it with National Assembly members; on the other hand, our committee members also made contact with the opposition party's members and explained the importance of the project.

Lastly, the committee operated a task force to standardize technology. We had private experts participate in considering rapid technological advances.

■ What advice would you like to give for the e-Government of Korea and developing countries?

For the e-Government of Korea, first, I would say that there is no completion in e-Government; e-Government should be recognized as a process. Even though e-Government is in cyberspace, because it also performs governmental functions, it should keep evolving as the governmental functions evolve in accordance with social changes. Second, in the same context, its maintenance and management are also as important as establishment. e-Government needs periodic upgrade due to the rapid technical progress in the IT field. Therefore, expenses for maintenance and management should be invested as much as those for deveplopment.

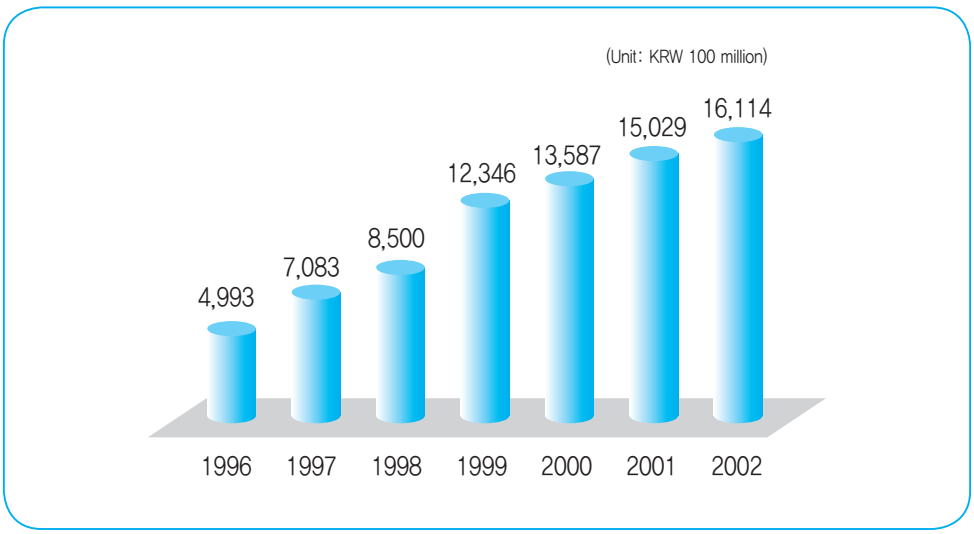
For the e-Government of developing countries, it would be useful to have a committee organization. In general, e-Government project involves several ministries, and they can have a big stake in the project. For these reasons, it would be better that a committee takes responsibility for the overall e-Government project like the e-Government Committee in Korea rather than assigning the project to a certain ministry. However, it should be an organization directly responsible to the top national leader (i.e. the President of the presidential system or the Prime Minister of the parliamentary system) in order to effectively coordinate ministries. Also, the top national leader should appoint a suitable person as chairperson and be interested in the committee's activities. However, the national leader's interest should be limited to a broad direction, and the leader should respect the committee's decision regarding details. Additionally, the resolution, commitment, and teamwork between the chairperson and committee members are very important for a successful committee operation.

※ This is a virtual interview based on the 「Theories of the Korean e-Government」 (Ahn, 2008: 108~113).

2.3. Financial Resources

In the full promotion stage, the general account budget and the Informatization Promotion Fund were used for e-Government projects. During this stage, KRW 776.5 billion was invested for national informatization. The biggest amount, KRW 452.9 billion, went toward the ministries' informatization projects, and the second biggest amount, KRW 119.9 billion, was used for building a high speed network infrastructure (BAI, 2003: 14~15).

Figure 4-2 | Annual Budget Spent on the Informatization Projects during the Full Promotion Stage (1996~2002)



Source: BAI, 2003: 14

The eleven e-Government activities of the special committee were included in the 2001 budget proposal as they were determined in May 2001. However, most activities were already being carried out with KRW 26.6 billion from the ministries' budget and KRW 48.5 billion of the Informatization Promotion Fund even before the eleven e-Government activities were selected. The eleven e-Government activities were included in the 2002 budget.

The 2003 budget aimed to support the linking of e-Government services, information sharing, and expanding the type of civil services offered in e-Government since the most eleven activities were being completed and online services were being launched. Also, KRW 50 billion of the Informatization Promotion Fund was allocated for some sub-activities whose specific plans were yet not determined and for the new e-Government projects of the next government. This was because it was not reasonable to allocate the limited financial resources only to the eleven activities given the impending launching of the next

government. The 2003 e-Government project was selected as a project whose budget could be allocated and implemented whenever it was needed. Meanwhile, the government had each ministry use their own budget in operating and maintaining the established systems rather than tap the Informatization Promotion Fund (e-Government Special Committee, 2003: 94).

Table 4-4 | Budget for the 11 e-Government Activities

(Unit: KRW 100 million)

Activity	Total	Before 1999	2000	2001	2002
Civil petitions (G4C)	295.9	-	9.9	158.3	127.7
Informatizing local level administration	1,916.2	740.4	336.9	332.6	506.2
Connecting the four social insurance information systems	95.5	-	-	2.7	92.8
Personnel Policy Supporting System (PPSS)	150.0	-	-	10.5	139.5
e-approval and e-document	172.8	12.2	49.6	50.0	61.0
e-Procurement system (G2B)	287.1	-	-	12.5	274.6
Home Tax Service (HTS)	192.9	12.7	6.9	41.3	132.0
National finance info-system	246.5	44.5	-	40.0	162.0
National Education Information System (NEIS)	725.2	11.3	6.8	95.0	612.0
Gov-seal and private e-signature	570.0	40.0	130.0	135.0	265.0
Setting a pan governmental integrated computing environment	30.0	-	-	-	30.0
Total	4,682.1	861.1	540.1	878.0	2,402.8

Source: BAI, 2003: 16

A clear means to secure the financial resources for e-Government projects was utilizing the Informatization Promotion Fund. The Informatization Promotion Fund was established in January 1993 to promote informatization, to establish and advance ICT industry infrastructure, and to support ICT research and development. The fund was used to promote the development of high-speed ICT infrastructure, informatization promotion projects, ICT research and development, projects to develop and establish the ICT standardization, ICT human resource training as a form of investment or loan. The Informatization Promotion Committee deliberated the fund's operating policy whereas the Ministry of Information and Communication (MIC) had authority over the fund through its affiliated organization, ICT Research Promotion Agency. The ICT Research Promotion Agency under the MIC selected the project and provider which would support and manage the project fund and execution (Ji, Moon&Son, 2004: 27).

The Informatization Promotion Fund was used for the eleven e-Government activities at hand because these projects could not be included in the general account budget since they were pursued near the end of the administration term. The eleven activities were determined in May 2001, and the specific costs of each activity could only be estimated after BPR/ISP (Business Process Re-engineering/Information Strategy Planning). However, budget deliberations in Korea are carried out from June to September of the previous fiscal year. For these reasons, the eleven activities could not be included in the 2001 budget and many of them were not sufficiently reflected in the 2002 budget. Only some of these projects, which had been planned before the eleven activities were selected (i.e. informatizing local level administration, establishing the national finance information system and the e-approval system, diffusing e-signature, and so on), could be supported from the general account budget. The activities which could not sufficiently get support from the general account budget had to use the Informatization Promotion Fund because it was more flexible. According to the operating policy of the fund, its total amount was determined a year before it was implemented and the specific contents of projects and the amount for each project were finally decided in the current business year (e-Government Special Committee, 2003: 90).

The fund encouraged the development of the required technology and the introduction of high-priced equipment by lending funds at low interest to individual companies who would otherwise not be able to afford them due to high risks and large scale of investment. The fund contributed to the accumulation and development of ICT by providing KRW 108.8 billion for 8,272 projects from 1993 to 2002. From 2001 to 2002, KRW 155.3 billion out of KRW 275.9 billion spent on the eleven activities were supported from the fund (e-Government Special Committee, 2003: 94).

3. Outcomes and Limitations

The major accomplishments of the full promotion period are as follows: in 1998, the government's representative website (www.eGov.go.kr, Minwon24 at present), public petition service, and real estate registration service were launched; in 1999, the statistical information system service was launched, and the computerization of family register was completed; in 2002 when the higher quality outcomes were revealed as the eleven e-Government activities were finished, an comprehensive portal for civil petitions (Minwon24 at present, www.minwon.go.kr), e-Procurement (KONEPS, www.g2b.go.kr), Home Tax Service (HTS, www.hometax.go.kr), and National Education Information System (NEIS, www.neis.go.kr) started to operate.

In terms of G4C, as a result of establishing a single window portal for civil petitions, twenty types of administrative information in the five areas which are closely relate to civil life such as resident, real estate, car, business and tax were shared between public servants from November 2002. Thereby, the citizens could deal with around 680 types of civil petitions without issuing required documents because a public officer could directly check the related information online (Chung, 2009: 106).

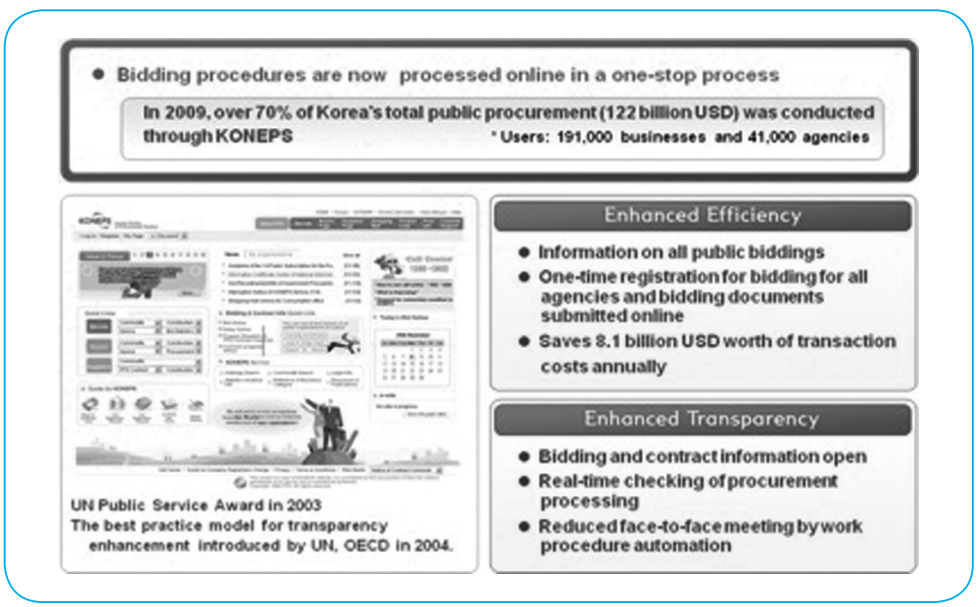
As a result of informatizing local level administration, twenty one tasks were informatized such as record of land registration, rural, environment, health and welfare, local industry, residents, automobile, building construction, finance and tax, regional development, culture and sports, water, livestock, fisheries, forests, roads, transportation, civil defense, internal administration, family registration, and disaster. Informatizing local level administration was also effective in G4C by installing KIOSKs all across the country even though it was classified as a G2G activity. The KIOSKs were installed in 712 places and issued more than 1.2 million official documents until December 2002. Regarding online issuance of official documents, however, they could be only read online or delivered by mail rather than be printed because the anti-forgery features were not developed (e-Government Special Committee, 2003: 135).

Figure 4-3 | Issuing an Official Document through a KIOSK

In April 2002, the Home Tax Service was launched. Thereby, all national taxes could be notified and paid online. The service for filing tax returns covered nine items such as value added tax, withholding tax, and so on. According to the usage statistics in 2002, 12.5% of value added tax and 34.5% of withholding tax were filed online.

Second, in terms of G2B, the e-Procurement (KONEPS) was opened in September 2002. Totally, 1,968 public agencies called for 34,773 bids for three month after launching. Among them, 1,914 agencies gave public notice of 33,109 bids (95.2%) and 27,625 (83.4%) were bid through the e-Procurement (e-Government Special Committee, 2003: 294). In 2002, as an estimated economic effect of the e-Procurement based on the procurement data in 2001, KRW 3,225 billion of transaction costs were saved for a year (Samsung SDS Consortium, 2002).

Figure 4-4 | e-Procurement (KONEPS)

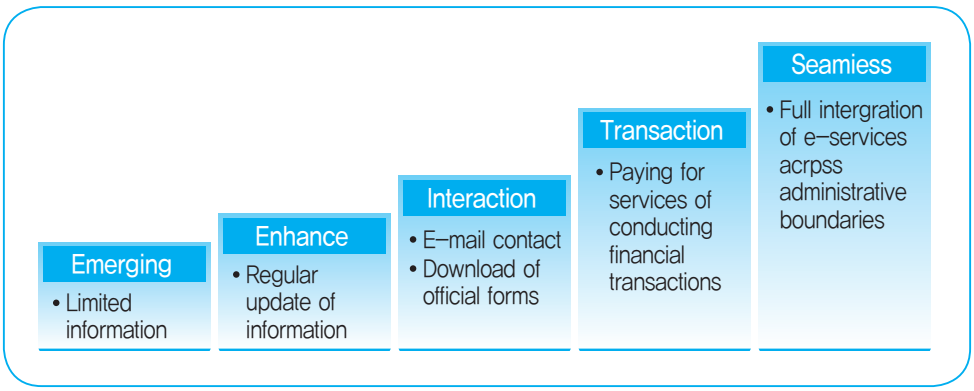


Third, in terms of G2G, as a result of diffusing e-approval and e-document activity, e-documents began to be distributed in the central administrative agencies from July 2000, between the central administrative agencies and local governments from September 2001, and among all administrative agencies by October 2002. The usage rate of e-approval was 21.2 percent in December 1998 before the activity started; however, it was increased to 92.6 percent in December 2002. The usage rate of e-documents was 39.9 percent in February 2001; however, it rose to 82.3 percent in December 2002, showed the rapid diffusion.

Based on these accomplishments, the Korean government declared the completion of the e-Government foundation in November 2002. The performances received high praises

internationally. In the latter part of the full promotion stage, Korea was ranked at the 15th and 13th country in the UN e-Government Readiness Index in 2002 (measured in 2001) and 2003 (measured in 2002) respectively. Going through the full promotion stage, Korea was evaluated as an e-Government leading country, which meant it was at the level where the transaction is possible (e-Government Special Committee, 2003: 290~300).

Figure 4-5 | Stages of e-Government of UN



Even though it was necessary to complete an information system establishment project within a short period of time, the First e-Government Plan was implemented under a heavy time pressure because the project was formulated at the end of the presidency. For this reason, the e-Government Special Committee had three broad limitations: the selection and implementation of activities, the accomplishment of objectives, and the coordination of conflicting interests. First, in terms of the selection of activities, the activities of the plan were chosen without enough demand survey for citizen and in-depth examination owing to the lack of time even if the activities were selected after gathering the ministries' opinions. Moreover, in the process of implementation, the opinions of stakeholder, expert and NGO could not be reflected in the important decision-making. To be specific, in case of the establishment of the National Education Information System (NEIS), it faced strong opposition from the Korean Teachers&Educational Workers' Union and NGO against collecting students' personal information by the central government after the NEIS was established. In case of G4C activities, it should have been planned and implemented after the target and scope of the civil petitions which would be served online were clearly determined from the stage of BPR/ISP through enough discussions with the agencies which provide and use information, but it did not. Thus, quite a few civil petitions which had been planned were excluded from the online service list in the course of interdepartmental consultation.

Second, the actual level of the achievement of objectives could not reach the intended level in some activities because the systems were established without enough infrastructures for system operation. Therefore, some activities to establish systems should be contented with the installation of infrastructures to ensure just system launching.

Third, the e-Government Special Committee showed the limitation in coordinating some severe conflict of interests among ministries. For instance, the eleventh activity, setting the pan governmental integrated computing environment, could almost not start in spite of its appropriateness. It ended up in the research to find a proper direction for the integration (i.e. BPR). Any ministry could not execute the activity plan because of the sharp conflict for the initiative between the MIC (Ministry of Knowledge Economy at present) and MOGAHA (MOPAS at present). Of course, the First e-Government Plan led more cooperation and linkage among relevant ministries than the other earlier e-Government projects. However, it still had limitations in sharing and co-utilizing information, connecting among administrative agencies or public services, and avoiding overlapping investment (e-Government Special Committee, 2003: 305~307).

2011 Modularization of Korea's Development Experience
The Introduction of e-Government in Korea

Chapter 5

Advanced Stage (2003~2011)

1. Background of introduction and goal of the e-Government policy
2. Policy tools
3. Outcomes and Limitations

Advanced Stage (2003~2011)

In the advanced stage, the e-Government infrastructure (Back Office) which had been built up in the previous stage was completed, established and settled, and government-wide and comprehensive public services became possible. Most citizens were then able to avail of IT equipment (e.g. computer, laptop and smart phone) and use the super-highway information network; therefore, several governmental services were then offered to citizens and businesses on-line, in real time, without the constraint of time and space. By project and administration, the advanced period can be divided into the Roh, Moo-hyun administration period (2003~2008) in which the Second e-Government Plan (2003~2007) was formulated and implemented and the Lee, Myung-bak administration period (2008~2012) during which the National Informatization Basic Plan (2008~2012) and the Smart e-Government Plan (2011~2015) have been pushed.

1. Background of Introduction and Goal of the e-Government Policy

1.1 Background of Policy Introduction

The e-Government policies formulated and implemented in the advanced stage had three contexts: the public's rising expectation for e-Government, the strong will of the President to reform the government, and the diffusion of mobile devices to the public.

First, the public's expectation for e-Government had risen. As the e-Government in Korea went through the introductory, foundation establishment and full promotion stages, the general public became accustomed in using the IT-based public services, and expected more public services to be provided online more conveniently and quickly.

Second, the President had a strong will to reform the government. The Roh, Moo-hyun administration was inaugurated in February 2003 with the public's expectation for e-Government and government innovation. The Roh, Moo-hyun government intended to maximize the effects of government innovation by linking with e-Government. To achieve this, the e-Government Professional Committee was organized under the Presidential Committee on Governmental Innovation and Decentralization in April 2003. This committee confirmed and announced the Second e-Government Plan after three months of groundwork.

Third, mobile devices had penetrated the public. In the full promotion stage, the e-Government services were offered based on the cable-based internet and desktop PC. e-Government services were distributed more widely in the advanced stage as wireless internet and mobile devices such as notebooks, tablet PCs, and smart phones. For this reason, the Lee, Myung-bak government has formulated and implemented the e-Government policy with the consideration of mobile devices.

1.2. Goals and Strategies

The Roh, Moo-hyun government set the goals of the e-Government policy using the To-Be Model for five-years, based on the As-Is Model as shown in <Table 5-1>.

Table 5-1 | Goals of the e-Government Policy of the Roh, Moo-hyun Government

Goal	Explanation of the goal	Major index	Current state (2003)	Expected state (2008)
Improving citizen and business service	Most civil and business affairs can be addressed without visiting agency.	Online level of civil petitions	15%	85%
		Competitiveness of business supporting	24th place	10th place
		Agency visiting times	10 times per year	3 times per year
		e-Government utilization ratio	23%	60%
Increasing administrative efficiency	Expanding of the scope of the task of digitalizing and information sharing Real-time and integrated management of information resources	Co-task processing b/w agencies	Partial digitalizing, non-connected	Fully digitalizing and connected
		Digitalizing document	Coexistence of paper and e-document	Only e-document
		Sharing administrative information	Limited sharing b/w agencies	Fully sharing b/w agencies
		Information resource management	Scattered, individual	Integrated, connected
Improving democracy of administration	Promoting policy participation by actively and openly providing administrative information Strengthening self-control of personnel information	E-participation	Opinion survey level	Participation in policy formulation
		Opening of information	Passive, limited opening	Active, fully opening
		Privacy protection	Privacy invasion is possible	Strengthening self-control of personnel information

Source: MOPAS&NIA, 2008: 26

The goals of e-Government policy in the first half of the advanced stage are classified into the following: improving citizen and business services, increasing administrative efficiency, and improving democracy of administration. The quantitative objectives were set in the quantifiable sub-goals while the qualitative and conceptual objectives were set for non-quantifiable sub-goals. At this point, the goals of e-Government policy were set along the result-oriented project management model. Also, some contents were included in the policy reflecting the focal indices which were used by international organizations such as the UN, the IDC and the ITU in order to attain the best level in the world (Chung, 2009: 100). The Roh, Moo-hyun government pursued the thirty one activities of the Second e-Government Project with the four strategies. The first strategy was to connect the e-Government project with the administrative reform, the second was user-oriented project, the third was goal setting and phased performance management, and the fourth was the linkage of the project with IT industry promotion.

Meanwhile, in the second half of the advanced stage, the Lee, Myung-bak administration completed the five activities which were not completed in the Second e-Government Project and formulated a new e-Government policy. The strategy of the e-Government policy was to pursue e-Government within the framework of national informatization like the early period of the full promotion stage because the informatization environment in Korea has been enriched and most e-Government activities of the first advanced stage were finished.

The Lee, Myung-bak government selected five areas, twenty one agendas, and seventy two informatization activities. The fourth area, "knowledge government which works well," is an e-Government project that consisted of nineteen activities. The National Informatization Basic Plan has been executed with the four phases: preparation, formulation of the implementation plan, implementation, and utilization.

Table 5-2 | Timeline of the National Informatization Basic Plan

Stage	Preparation (2008)	Formulation of the implementation plan (2009)	Implementation (2009~2011)	Utilization (2012)
Content	· Formulating the basic plan · Setting the conditions - Establishing an organization in charge - Organizing the legal framework	· Formulating the implementation plan · Improving process · Building up performance management system	· Integrating information resources · Connecting and integrating public services · Change management	· Applying the informatization · Creating the performance

Source: Chung, 2009: 120

2. Policy Tools

2.1 Legal Framework and Projects

2.1.1 The Second e-Government Project (The 31 e-Government Roadmaps, 2003~2007)

The Second e-Government Project, the e-Government Roadmap, of the Roh, Moo-hyun government was comprised of four areas, ten agendas and thirty one activities. The structure is as the following <Table 5-3>.

Table 5-3 | The 31 Activities in the e-Government Roadmap

Area	Agenda	Activities
Renovating Work process	Taking root electronic working process	1. Digitalizing the whole document process
		2. Advancing the central and local government finance
		3. Realizing e-local government
		4. Establishing e-inspection system
		5. Realizing e-Assembly
		6. Building up the integrated criminal justice system
		7. Informatizing personnel administration
		8. Informatizing foreign and trades affairs
		9. Real-time management of national agenda
	Co-utilizing administrative information	10. Expanding the scope of administrative information sharing
	Work process reengineering	11. Developing the Business Reference Model (BRM)

Area	Agenda	Activities
Renovating Public service	Advancing public service	12. Advancing online civil petitions
		13. National security management service
		14. Advancing real estate affairs
		15. Advancing tax service
		16. Social welfare service
		17. Food and drug information service
		18. Employment service
		19. Administrative adjudication internet service
	Advancing service for business	20. Single window service for business supporting
		21. National distribution service
		22. E-trades service
		23. Governmental service for foreigner
		24. Supporting the export of e-Government
	Expanding E-participation	25. Online participation of citizen
Renovating the management of information resources	Integrating and standardizing information resources	26. Setting up pan governmental computing conditions
		27. Advancing the e-Government network
		28. Application of the pan governmental Enterprise Architecture (EA)
	Strengthening information protection system	29. Building up the information protection system
	Specializing the manpower and organization in charge of informatization	30. Strengthening and reorganizing the manpower and organization in charge of informatization
Organizing legal framework	Arranging the related institution	31. Arranging the institutions related to the realization and safety of e-Government

Source: Chung, 2009: 104

2.1.2. National Informatization Basic Plan (2008~2012), Smart e-Gov Plan (2011~2015)

The Lee, Myung-Bak government in the second advanced stage formulated the <National Informatization Basic Plan> (2008~2012) in December 2008 and the <Smart E-Gov Plan> (2011~2015) in March 2011. The Lee, Myung-Bak government organized a work group, Informatization Promotion Working-Level Committee, for the National Informatization Basic Plan in the early 2008. The work group first analyzed the megatrends, the informatization plans of each ministry, and the government agendas to select the activities of the national informatization. The vision, goal, and direction of the national informatization were determined based on the result of analysis. Also, the work group conducted the demand survey of whole central administration agencies, citizen, and system integrators. As a result, the five areas, twenty one agendas, and seventy two informatization activities were chosen. Among them, the e-Government project is the fourth area, "knowledge government which works well" which consists of four agendas and nineteen activities.

Table 5-4 | The 19 Activities in the National Informatization Basic Plan

Agenda	Activity
4-1 Intellectual administration system which creates performance	4-1-1 Promoting the pan governmental distribution and utilization of knowledge information
	4-1-2 Establishing the digital-based cooperation system of state affairs
	4-1-3 Multi-dimensional administrative support using spatial information
	4-1-4 Realizing the real-time and mobile-based M-Gov
4-2 Creating the convenient public services for citizen	4-2-1 Realizing the fully-online civil petitions without paper
	4-2-2 Establishing the e-Government portal which provides all public service through single window
	4-2-3 Improving the supporting system for business convenience
	4-2-4 Establishing the integrated delivery system of public service for citizen
	4-2-5 Fostering the utilization of e-Government service

Agenda	Activity
4-3 Realizing the digital democratic administration which communicates with citizen.	4-3-1 Increasing the transparency in policy and administration
	4-3-2 Strengthening the communication with citizen by widening the participation channel.
	4-3-3 Building up the legal information service for the life of citizen
	4-3-4 Realizing the u-Assembly standing for the public
	4-3-5 Strengthening communication with the global society and the digital international cooperation
4-4 Strengthening the base of sustainable information development	4-4-1 Connecting, integrating and efficiently managing the pan governmental information resource
	4-4-2 Establishing the connected and integrated system of local information and public information resources
	4-4-3 Establishing the co-utilization system of information resources and the pan governmental EA
	4-4-4 Rationalizing the management system of the informatization project
	4-4-5 Reinforcement of the Capability in the informatization project of public sector

The Smart E-Gov Plan was formulated in 2011 to convert the PC-based e-Government into the mobile e-Government with the use of mobile devices such as smart phones and tablet PC. In this plan the smart government was defined as "The advanced government where the citizen freely use public services regardless of the type of medium by combining the advanced information technology with government services and which is being improved through the participation of and the communication with citizens." The Smart e-Government Plan consisted of five agendas: first, the top mobile e-Government in the world; second, a safe and warm society; third, the work-life balanced smart work; fourth, e-Government based on strong infrastructure. It also includes fifteen activities and forty four sub-activities. Compared to the previous e-Government project, the remarkable features of the plan are as follows.

First, in terms of G4C, the mobile e-Government portal (m.korea.go.kr) is going to be established for mobile device users. Several public services are being developed for mobile device such as mobile service, location-based service, and real-time service.

Second, in terms of G2G, a mobile office will be set up for the street level public servants. Several business models are being developed to deal with internal affairs and site inspection on the street.

Third, in terms of infrastructure, the wireless internet network will be advanced and the cloud environment for mobile device will be set up. To be specific, the speed of wireless network will be increased from 1Mbps in 2011 to 100Mbps by 2015 and the Wi-Fi areas in public places will be expanded. Also, the pan government cloud (PC and server virtualization) infrastructure will be established in the NCIA (National Computing and Information Agency) by changing the 2,170 old devices into the 322 high-end devices.

2.2 Organization

The organizations in charge of e-Government in the advanced stage during the Roh, Moo-hyun government were the e-Government Professional Committee, e-Government Special Committee, and MOGAHA; and in the Lee, Myung-bak government are the Informatization Promotion Committee, President's Council on Information Strategies, and MOPAS.

2.2.1 e-Government Professional Committee (2003. 4~2005. 5), e-Government Special Committee (2005. 6~2006. 1), and MOGAHA (1998~2008. 2)

The organization in charge of e-Government in the early period of the Roh, Moo-hyun administration was the e-Government Professional Committee, established under the Presidential Committee on Governmental Innovation and Decentralization, and operated from April 2003 to May 2005. During the Second e-Government Project, the Office of Presidential Policy managed the issue and progress while it was in charge of the First e-Government Project under the Kim, Dae-jung administration. Also, the resolution of major issues were decided in meetings with the president present.

However, the e-Government Professional Committee could not strongly and effectively coordinate the project and related ministries because the legal and institutional status of the committee was lower than the e-Government Special Committee. For example, the status of the e-Government Professional Committee members was lower than that of the e-Government Special Committee members (Chung, 2009: 414).

For this reason, the e-Government Professional Committee was abolished, and the e-Government Special Committee was organized in June 2005 under the reorganized Presidential Committee on Governmental Innovation and Decentralization. In order to effectively coordinate the e-Government project, the status of members in the e-Government Special Committee was raised to vice-minister, which was higher than that of the e-Government Professional Committee members, in consideration of the experience of the Kim, Dae-jung government.

However, seven months later, the role of special committee was changed into counseling, and every role of the implementation of the project was transferred to the MOGAHA. This

was because the Roh, Moo-hyun government thought that the committee organization was effective in developing and planning the activities of the e-Government project in the project formulation stage but the efficient implementation and management of each ministry were required in the implementation and completion stage (MOPAS&NIA, 2008: 37~38). The MOGAHA directed the project in order to utilize e-Government as an instrument for administrative reform.

2.2.2 Informatization Promotion Committee, President's Council on Information Strategies, and MOPAS

With the launch of the Lee, Myung-bak administration, the MIC was abolished and the function of the national informatization was transferred into the MOPAS, which was reorganized from the MOGAHA. Also, a new organization in charge of e-Government project was needed as the Presidential Committee on Governmental Innovation and Decentralization was abolished.

However, the Lee, Myung-bak government utilized the existing organization, the Informatization Promotion Committee, before the President's Council on Information Strategies was established, since the work to fully reform the existing Framework Act on Informatization Promotion into the Framework Act on National Informatization took a considerable time. The second vice-minister of MOPAS was appointed as the head of the Informatization Promotion Working-Level Committee. The Informatization Promotion Working-Level Committee practically performed the task of establishing the National Informatization Basic Plan and arranging the related laws and institutions. As a result, the National Informatization Basic Plan was announced in December 2008 and its action plan was published in April 2009.

In January 2009, the Framework Act on National Informatization was enacted, and the President's Council on Information Strategies was organized based on the act. The chiefs of the council were the prime minister and a nongovernmental expert appointed by the President, and the number of members was set to thirty five including the chiefs.

In addition, two assistant administrators were appointed for efficient operation and support. The minister of MOPAS was appointed as the assistant administrator of the Council on Information Strategies, and the second vice-minister of MOPAS was appointed as the assistant administrator of the Working-Level Committee on Information Strategies (Chung, 2009: 415~416).

2.3 Financial Resources

Korean government budget consists of a general account, eighteen special accounts, and sixty funds including the ICT Promotion Fund. In the case of the First National Basic Computing Network Project, the financial resource from the invest first and settle later

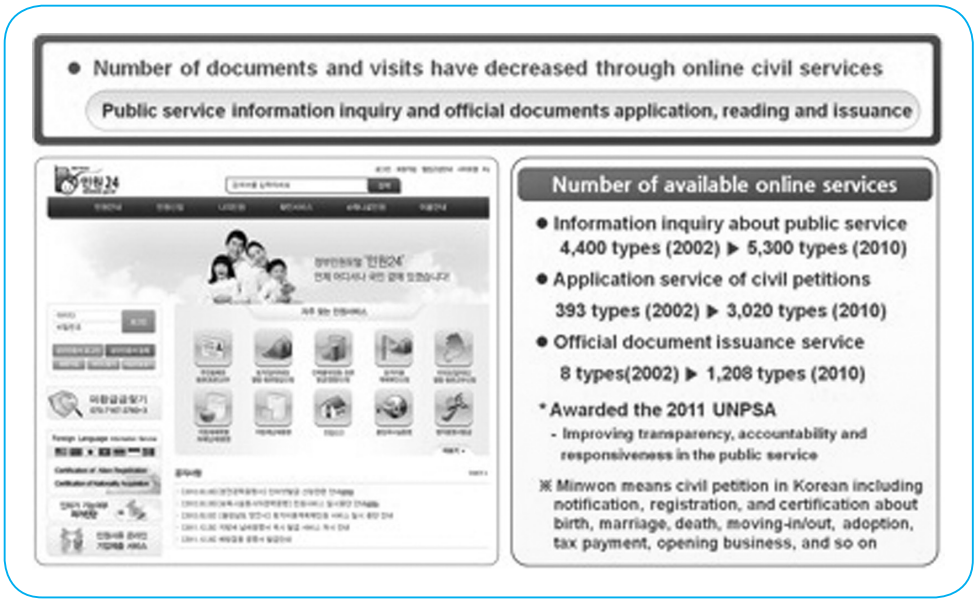
method was used in the general account; in the case of the First e-Government Project, the general account of the Informatization Promotion Fund was used. However, during the Second e-Government Project, the e-Government project secured the financial resource from the general account of the government budget because the general account in the Informatization Promotion Fund was abolished. As a result, the Ministry of Planning and Budget (MOSF at present) was in charge of the definitive budget planning and the MOGAHA (MOPAS at present) was in charge of managing and implementing the budget of the Second e-Government Project. The MOGAHA initially drew up the e-Government budget after surveying the demand for e-Government activities from each ministry, and implemented it after deliberations with the related agencies including the Ministry of Planning and Budget (MOPAS&NIA, 2008: 41).

3. Outcomes and Limitations

In the advanced stage, the performance of e-Government became more visible and internationally received more recognition compared to other periods. The performances can be classified into G4C, G2B/G4B, G2G, infrastructure, and international evaluation.

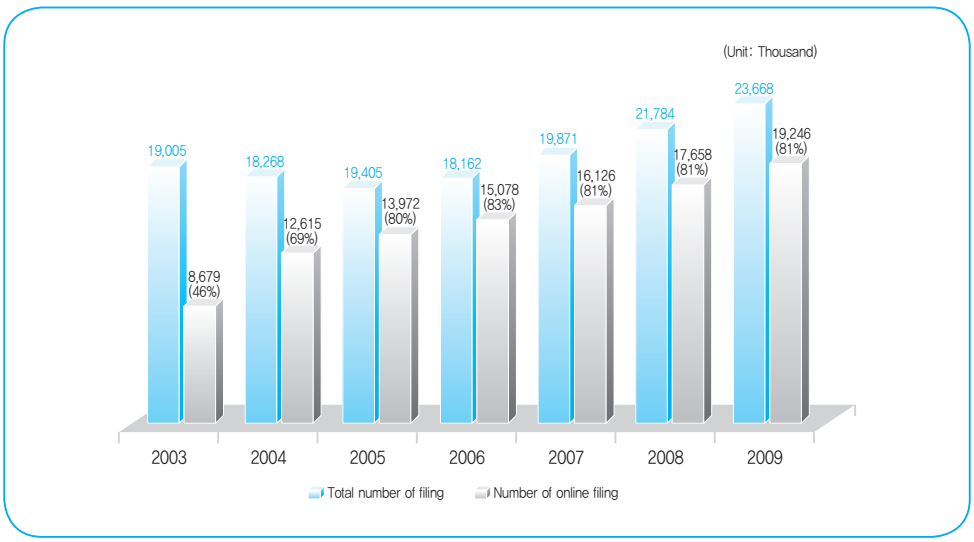
First, in terms of G4C, 3,020 types of civil petitions (i.e. notification, registration, and certification about birth, marriage, death, business registration, tax payment, moving-in/out, and so on) could be applied for and 1,208 types of official documents for registration and certification could be issued and printed through Minwon24 web site in 2010. It was a noticeable increase compared to 2002 when 399 types of civil petitions could be demanded and 8 types of official documents could be issued online. In case it cannot be issued and read, there were information about the agencies in charge of it, their phone number, deadline, required documents, and so on for all kinds of civil petitions (around 5,300 kinds). In addition, thanks to the rapid diffusion of mobile devices, 10 types of documents could be read through smart phones in 2011, and the number of available services will be increased.

Figure 5-1 | Minwon24 (G4C)



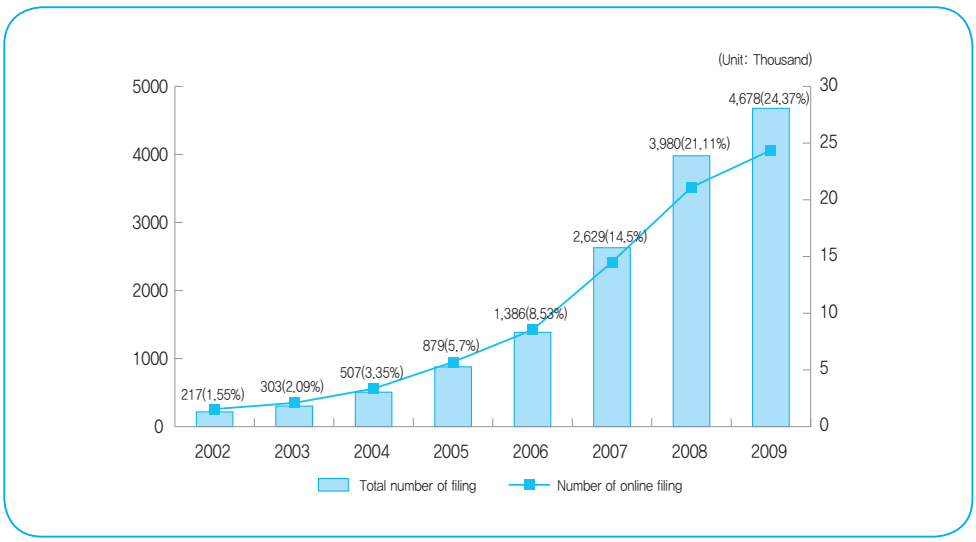
As a result of advancing the HTS, the types of taxes which could be filed online were increased. When the HTS was launched in 2002, just nine items could be filed, and corporate tax and income tax could not be filed online. In December 2007, 298 types of taxes (91.7%) out of 325 types could be filed; in 2011, all thirteen tax items could be filed. Also, a cash receipt system for grasping income of each business and the year-end tax adjustment were added in the HTS. In addition, 165 kinds of civil petitions have been dealt with since November 2010. As [Figure 5-4], the usage rate of online filing maintains more than 80% from 2005 which exceeds the ordinary usage rate of OECD countries, 30~40%. As the [figure 5-5], the usage rates of online payment were 24.37% in the number of times and 26.64% in the amount of money in 2009. Thanks to these outcomes, the National Tax Service achieved the ISO 20000 Certification in 2008 which is an international standard on IT management (National Tax Service).

Figure 5-2 | Usage Status of the HTS: the Number and the Rate of Online Filing



Source: e-National indicators : the usage status of HTS[15]

Figure 5-3 | Usage Status of the HTS: the Number and the Rate of Online Payment

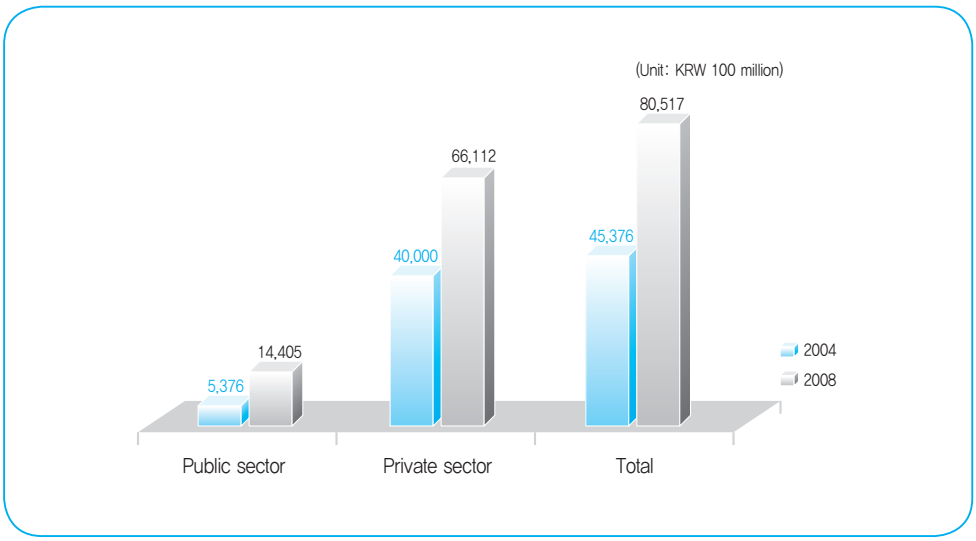


Source: e-National indicators : the usage status of online payment[16]

15 http://www.index.go.kr/egams/stts/jsp/potal/stts/PO_STTS_IdxMain.jsp?idx_cd=2726
16 http://www.index.go.kr/egams/stts/jsp/potal/stts/PO_STTS_IdxMain.jsp?idx_cd=2496

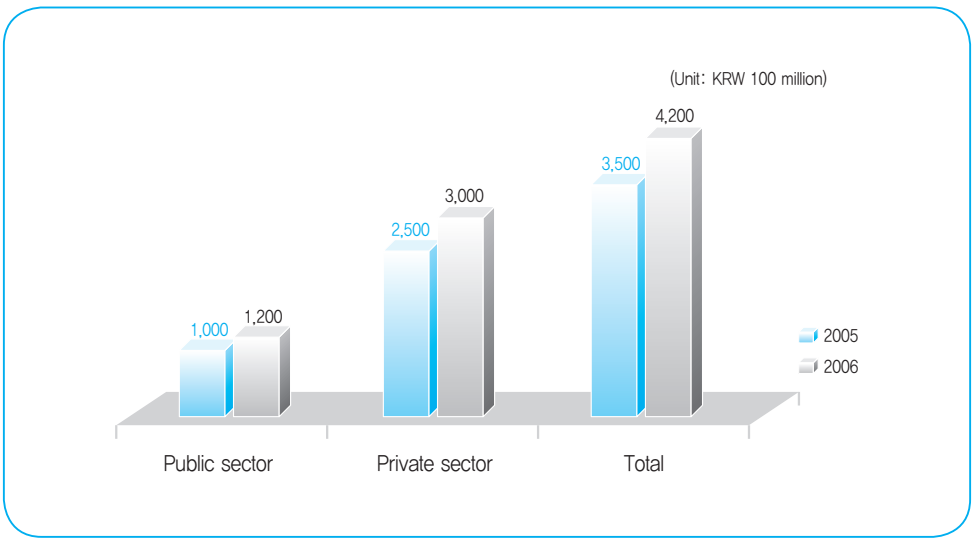
As a result of economic effects of HTS, KRW 350 billion of social cost in 2005 and KRW 420 billion in 2006 were reduced. Among them, KRW 250 billion in 2005, and KRW 300 billion in 2006 were saved thanks to the reduction of transportation expenses and labor cost. KRW 100 billion of administrative cost in 2005, and KRW 120 billion in 2006 were saved due to decreased paper bills (National Tax Service, 2006).

Figure 5-4 | Economic Effects of the HTS



Second, in terms of G2B, the e-Procurement system, KONEPS (www.g2b.go.kr) established in the full promotion stage became stabilized in 2005 and its performance has been visible. In 2009, 70 percent (KRW 85.7 trillion) of the total public procurement was conducted online; more than 42 thousand public agencies and 195 thousand private agencies have used the KONEPS since 2010.

Figure 5-5 | Economic Effects of the e-Procurement System (KONEPS)



According to the reports conducted in 2005 and 2009, the economic effect of the KONEPS was estimated at approximately KRW 4,537.6 billion in 2004 and KRW 8,517 billion in 2004. The saved cost belonged to companies thanks to the decrease in the number of agencies to be visited and documents to submit. For examples, the public sector saved KRW 1,440.6 billion in 2008 mainly in the processes of tender notices, drawing up contracts, and sending the written contracts; on the other hand, the private sector saved KRW 6,611.2 billion mostly in the courses of submitting applications for bidding and bidding participations (Lim and Lee, 2005, Lim, 2006).

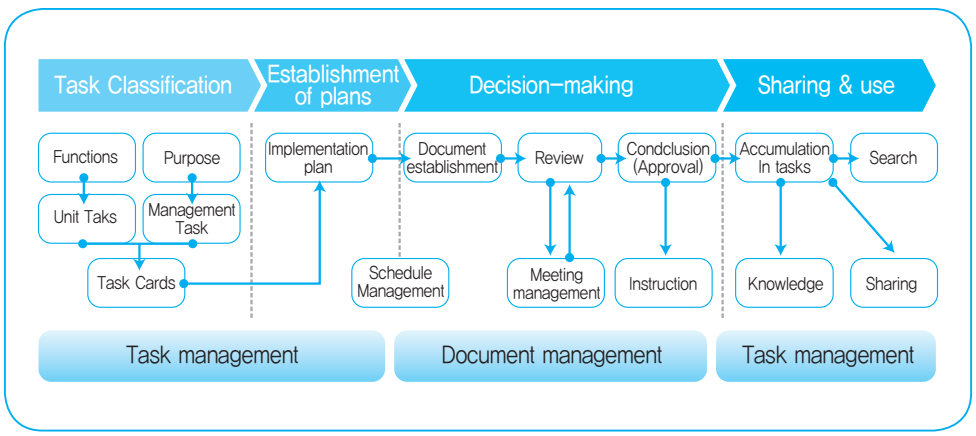
In terms of G4B, the "Business Supporting Plus G4B (www.g4b.go.kr)" which is the single window for business affairs began to operate. Online information about 1,887 types of business affairs in eighteen fields of fifteen governmental agencies was offered. Thereby, the required time and the process to establish a company were simplified from fourteen days with eight stages to five days with two stages.

Third, in terms of G2G, the business support systems for the Blue House and the administrative agencies have widely been used. The President can offer an opinion and comment on the report of secretarial staff through the business support system for the Blue House, and the opinions and comments are recorded in the Presidential Archive. The support system sets a condition to get on with more novel and creative work by reducing the time needed to prepare and attend a meeting, which is a large part of the secretariat function (MOPAS&NIA, 2008: 144).

The business support systems for the administrative agencies, the On-Nara BPS system is used in all central government agencies (58), all local level administrative agencies

(16), and some community level administrative agencies (12). In the system, every governmental business is systematically classified, and the administrative business is more efficiently conducted by standardizing and systematizing the business process from planning, scheduling, and performance management to decision-making. The governmental decision-making process and its results have been recorded and shared through the On-Nara system, which has improved the transparency, responsibility, and democracy of public administration.

Figure 5-6 | Standardized Administrative Procedures of On-Nara BPS



Source: MOPAS, 2010: 26

In addition to the business support systems, administration information sharing is also very important in G2G because it affects not only the efficiency of administration and public agencies but also the level of civil petition services. For this reason, the administration information sharing has been considered a top priority since the full promotion stage. As a result, the range of administrative information sharing was expanded from 20 types of information in 269 administrative agencies in 2003 to 92 types of information in 442 administrative, public and financial agencies in 2010. According to estimates, KRW 164.7 billion was saved, and the amount of carbon dioxide was reduced by 91 thousand tons of carbon dioxide due to the decrease in the number of visits and paper consumed (Korean government, 2010: 266).

Figure 5-7 | Conceptual Diagram of the Administrative Information Sharing

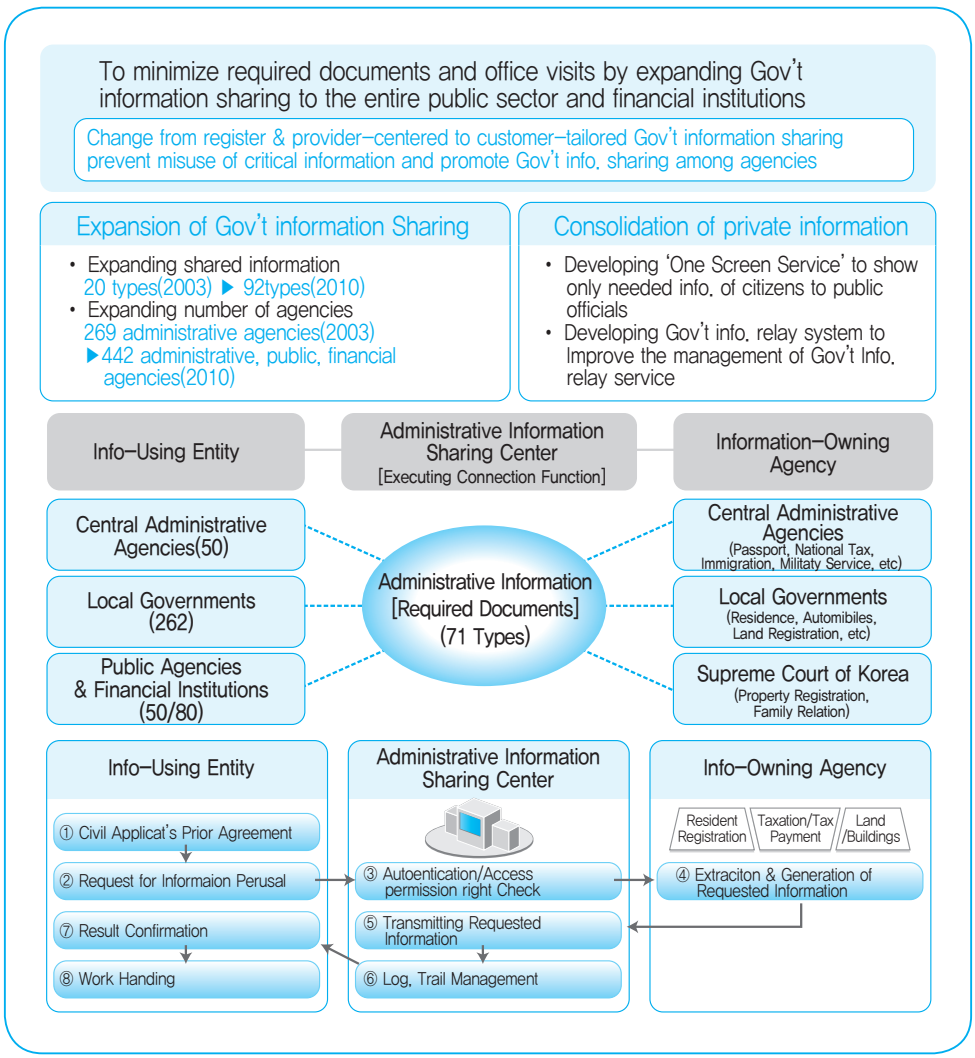


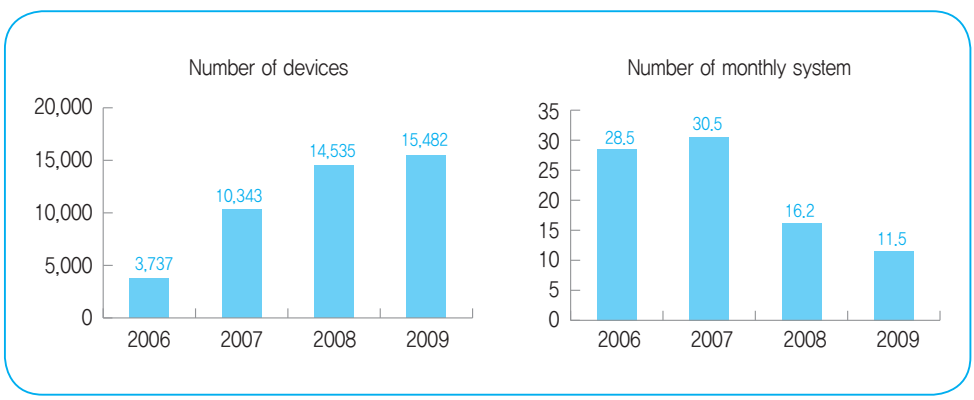
Table 5-5 | Current State and Effect of the Administrative Information Sharing

	2005	2006	2007	2008	2009
Number of shared information types	24	34	42	66	82
Number of usage times (10 thousands)	844	2,368	2,757	2,718	4,547
Saved cost (KRW billion)	348	1,035	1,094	1,016	1,647

* Korean government, 2009: 11, 2010: 266

Fourth, in terms of the infrastructure of e-Government, integrated governmental computing centers were established in Daejeon and Gwangju, which managed and operated the computing devices for e-Government. Before they were established, the computing devices were separately managed by each ministry. In May 2010, a total of 14,916 of information system resources of 41 ministries and agencies, including 5,656 servers, were operated and managed in the two computing centers. Monthly system errors were decreased from 28.5 times in 2006 to 11.5 in 2009, despite an increase in the number of devices due to the advancement of e-Government.

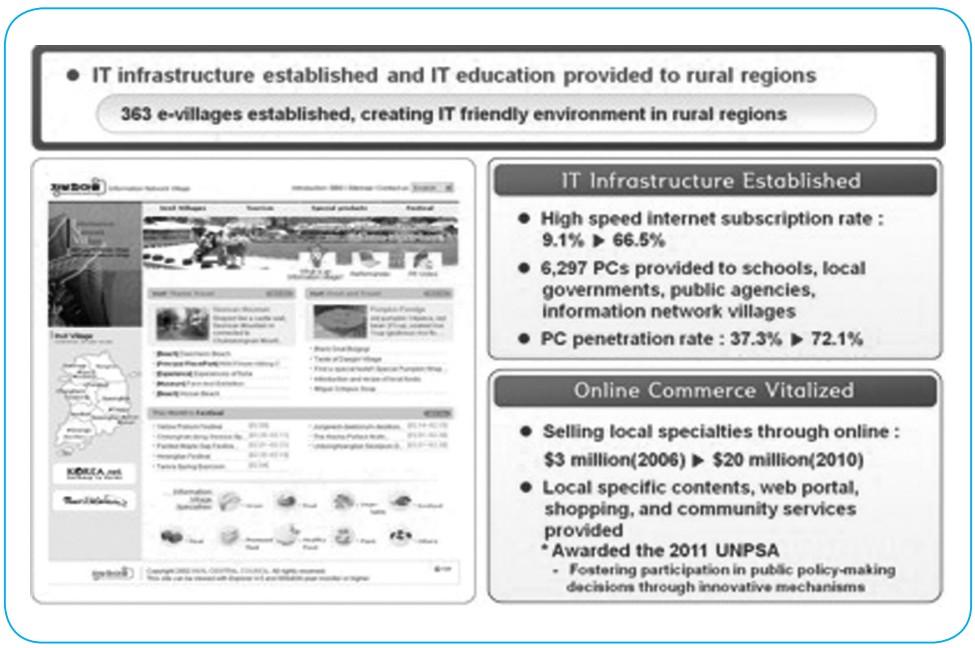
Figure 5-8 | The Numbers of Devices and Monthly System Errors of the Integrated Governmental Computing Centers



Fifth, these accomplishments were highly appreciated from abroad. Especially, Korea, which only ranked as the 15th country in the UN e-Government Readiness Index in 2001, was ranked at the top of the list in 2010 because of the continuous e-Government policies. Korea was also ranked first in the UN e-Participation Index in 2010.

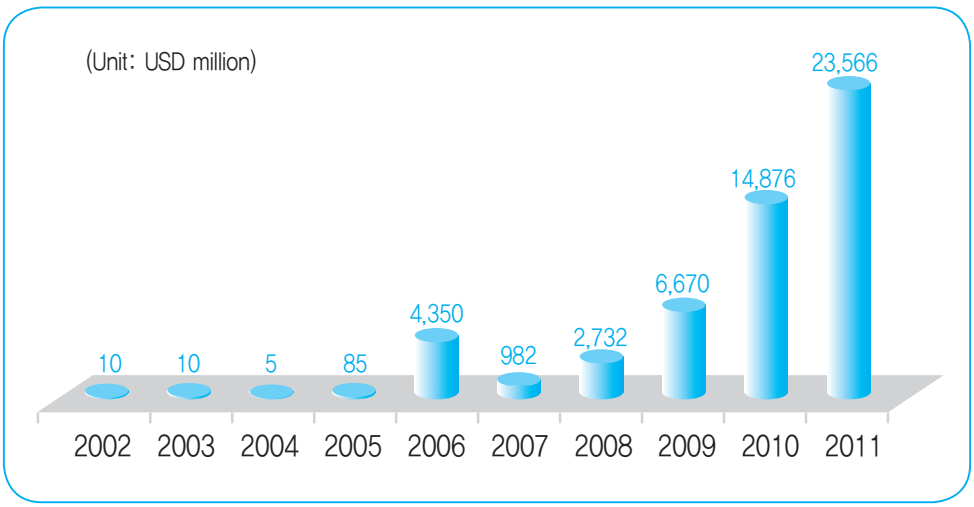
The excellence of Korean e-Government is recognized in international e-Government awards as well as international e-Government indices. The seven initiatives of the five Korean government institutions received the UN public service awards in 2011. Among them are the two initiatives of the MOPAS, the agency in charge of the overall Korean e-Government. The Information Network Village (INVIL) won the first place in the category of fostering participation in public policy-making decisions. The 24-Hour e-Services for the Public (Minwon24) won the second place in the category of improving the delivery of public services.

Figure 5-9 | Information Network Village (INVIL)



Thanks to these performances and evaluations, Korea has exported e-Government. The exports amounted to USD 9.8 million in 2007, 27.3 million in 2008, 66.7 in million in 2009, 148 million in 2010, and 235 million in 2011.

Figure 5-10 | The Value of e-Government Exports



However, the Korean e-Government still has limitations and challenges in combining the high technical skills and solid infrastructures with the development of democracy. The earlier e-Government policies were focused on technical development and visible outcomes. However, the e-Government in Korea is on the stage of applying e-Government to national governance in a democratic and rational manner beyond simply providing administrative information and receiving opinions.

2011 Modularization of Korea's Development Experience
The Introduction of e-Government in Korea

Chapter 6

Success factors of Korean e-Government and Implications for Developing Countries

1. Outcomes, limitations and Success factors of each stage
2. Implications of developing countries

Success factors of Korean e-Government and Implications for Developing Countries

The accomplishments of e-Government in Korea are an accumulation of long-term evolution rather than a result of a short period. That is, nowadays, e-Government in Korea can be regarded as a result of the dynamic growth after overcoming several challenges and obstacles (Song&Cho, 2007: 21). In this chapter, the accomplishments and limitations of each period are reviewed, and the success factors are identified in each stage. Finally, recommended activities for developing countries who wish to build up and improve their e-Government are presented, along with the recommended order of priority.

1. Outcomes, Limitations and Success Factors in Each Stage

1.1 Introductory Stage (1978~1986)

1.1.1 Outcomes and Limitations

In the introductory stage, the Ministry of Government Administration (MOPAS at present) formulated and implemented the two <Basic Plans of Administrative Computerization> (1978~1982). It was the first centralized computerization which covered several ministries. The aim of the Basic Plan of Administrative Computerization was to computerize the eighty tasks of thirty governmental agencies. As a result, the tasks of car registration (1982) and issuance of driving license (1982) and passport (1983) were computerized.

However, in this period, the unified strategic pan e-Government policy was impossible because the National Basic Computing Network Project was formulated by simply putting together the computerization plans of each ministry. Moreover, the basic computing network which required massive investment could not be established yet because most sub-projects were carried out on an annual basis.

In the latter period of this stage, it was necessary to have the national basic computing network and the administrative computing network. The Administrative Computing Network Basic Plan was established as the core e-Government project covering the five sub-projects of the National Basic Computing Network Project covering five fields (administration, finance, education/research, national defense and security).

However, despite the formulation of this plan, none of the agencies responded positively. For instance, the Samsung Economics Research Institute (SERI) openly opposed the plan as it was thought that the plans goals were impossible to achieve due to the lack of the technical and natural resources. In addition, the budget was not included in the plan because of different opinions among governmental agencies. For this reason, President Chun, Doo-hwan asked the agencies to agree on a plan. This is the reason why the National Basic Computing Network Project and the Administrative Computing Network Basic Plan were not implemented. The task of implementing the plan was passed to the next period.

1.1.2 Implications

In the earliest stage of e-Government, computerization was a priority activity. However, the technical accomplishments in the introductory period do not have any special meaning at this point because computerization and computing networks are very common even in developing countries now. However, the meaningful implications can be summarized into two points: first, the leadership of national leaders is important in presenting a vision of e-Government, attracting active participation, mediating, and coordinating the different opinions among major agencies because the support and confidence toward e-Government are unlikely to be high in countries where e-Government is still unfamiliar or not yet established. Second, a relevant organization should be designated to assume full responsibilities for e-Government policy and establishing mid-term and long-term plans because massive long-term investment is needed in the earlier stages.

1.2 Foundation Establishment Stage (1987~1996)

1.2.1 Outcomes and Limitations

The e-Government policies in the foundation establishment stage were the <First and Second Administrative Computing Network Basic Plan> (1987~1991, 1992~1996) which were the main sub-projects of the <First and Second National Basic Computing Network Project>. The National Basic Computing Network Project was established by the Computer Network Steering Committee, and the Administrative Computing Network Basic Plan was established by the Ministry of Government Administration (MOGA). Even if the risk and uncertainty were high, the Computer Network Steering Committee was able to demonstrate strong leadership since the Chief Presidential Secretary took the position of the committee chairperson.

The project which showed the most remarkable outcomes in the foundation establishment stage was the First Administrative Computing Network Project. As a result of the First Administrative Computing Network Project, there were several outcomes in the six governmental task areas. First, personal information of 5.6 million citizens was inputted into the computer for resident information management, and certified copies of resident registration could be issued in the 3,700 community level agencies from January 1991, regardless of the residence area. Prior to this, the certified copy of resident's registration can be issued only in the citizen's residence area. Second, as a result of the computerization of real estate management tasks, 3.2 million real estate registrations were inputted into computer, and all local level agencies were connected online; thereby, citizens could see the land registration and the transfer of property rights at any of the 273 local level agencies. Third, the 133 related agencies were connected online and the services for citizens started in March 1990 in the automobile management task. The computerization of automobile management means that the internal administrative tasks and the procedures for citizens during the whole course from releasing to scrapping were computerized. This included various automobile related processes including the registration-related tasks such as new registration, renewal, transfer, cancellation, collateral and sequestration, the notice of the automobile inspection and its result and the individual taxi license management. Fourth, as a result of the customs task computerization, the tasks of customs formalities and bonded goods management were computerized and the 109 related agencies such as customs, customs house broker and bank are connected, then the service for citizen started in April 1990. Fifth, in terms of the employment management, the tasks of job placement, management of business place and job mapping were computerized, and the 49 local agencies under the Ministry of Labor were connected, then the service nationally started in 1990. Sixth, in the statistics management, the 20 national basic statistics such as price, population, industrial production were computerized, and the information was provided online from January 1991 (MIC&NCA, 2005: 37~40). Apart from six performances, it was an important performance for Korea to develop its ability to manage and operate a mega and long term e-Government project.

As a result of the Second Administrative Computing Network Project, the resident moving in management system was integrated with the resident moving out management system, and the service nationally began in 1995. In 1995, the land information network was established and used in establishing real-name land transaction system and consolidated taxation per household (MIC&NCA, 2005: 51). However, the performance of the second Administrative Computing Network Project was not as considerable as the first project since the status of the Computing Network Steering Committee became lower at the beginning of the second project and securing the financial resources was also changed (i.e. the investment first and settlement later strategy was abolished). After the chairperson of the committee was changed from the Chief Presidential Secretary to the Minister of Post and Telecommunications, the meeting could not be held due to the absence of the ministers who were committee members. In addition, the Kim, Young-sam government which

came to power in a period of transition from military regime to democracy focused on the political reform to clean up the vestiges of military dictatorship in its early days. Thus, the performance was also relatively poor at that time (Song&Cho, 2007: 30).

1.2.2 Success Factors

There are three success factors in the First Administrative Computing Network Project. The first one was the interest of the President in the project and his will to push it. The President Chun, Doo-hwan, not a former administrator or a politician but a former military man, sought and accepted expert advice from technocrats in conducting state affairs even if he did not have a lot of knowledge on computers and computerization. The technocrats had a strong conviction about the future ripple effects of computerization when the e-Government and the informatization were unfamiliar. Their conviction convinced the President to pursue the National Basic Computing Network Project and the Administrative Computing Network Project.

The second one was the strength of the organizations pushing the project. The first success factor, the presidential interest and his will were realized by organizing the Computer Network Steering Committee and appointing his chief secretary to the head of the committee, which meant that the committee was under the presidential office. Even though the Chief Presidential Secretary could not usually have an official title, as the chairman of the committee, he steered and promoted the National Basic Computing Network Project, resolved differences among the branches of the government, and got involved in the information sharing, the standardization and security for sharing computer and communications equipment, and the acquisition of financial resources from 1987 to 1989. The fact that the project could not be strongly pushed between June 1989 and 1994 when the head of the committee was changed into the Minister of Post and Telecommunications reflects the importance of a strong organization to push the project.

The third factor was the strategy to secure financial resources, "the investment first and settlement later" strategy. This enabled the government to overcome the obstacle of annual budgeting in the introductory stage and allowed it to secure the necessary financial resources for the first project. It was a novel idea at that time that the government repaid the invested money by using and paying for the network for a long time after the investment through a subsidiary company of a public enterprise. The fact that the second project supported only by each ministry budget resulted in less considerable performance indirectly showed the effectiveness of the 'investment first and settlement later' strategy.

1.3 Full Promotion Stage (1996~2002)

1.3.1 Outcomes and Limitations

In the early period of the full promotion stage, the e-Government policy was not prioritized. As the national focus was to concentrate on overcoming the foreign exchange crisis, it was implemented by ministries without a strong steering organization. At this time, the MIC and MOGAHA formulated the e-Government projects for the initiative of e-Government policy competitively. The MIC regarded e-Government as a sub-project of national informatization and formulated the <First and Second National Informatization Promotion Master Plan (1996~1998, 1999~2001)> whereas the MOGAHA regarded e-Government as a government business management method and formulated the <e-Government Vision and Strategy (1999~2002)> and the <Comprehensive e-Government Action Plan (1998~2002)>. However, the plans lacked concreteness and there were overlapping contents between the plans. However, the Informatization Promotion Committee focused more on the national informatization project than on e-Government projects.

In January 2001 when the foreign exchange crisis was almost over, the e-Government Special Committee was organized under the Presidential Committee on Governmental Innovation. The special committee was operated apart from the Informatization Promotion Committee to formulate an e-Government project and was assured of support by reporting to the President via the Senior Presidential Secretary for Policy Planning. In May 2001, the special committee formulated the <First e-Government Plan (2001~2002)> which consisted of 11 activities.

The major accomplishments in the full promotion period are as follows: in 1998, the government's representative website (www.eGov.go.kr, Minwon24 at present), public petition service, and real estate registration service were launched; in 1999, the statistical information system service was launched, and the computerization of family registeration was completed; in 2002 when the better outcomes were revealed as the eleven e-Government activities were finished, a comprehensive portal for civil petitions (Minwon24 at present, www.minwon.go.kr), e-Procurement (KONEPS, www.g2b.go.kr), Home Tax Service (HTS, www.hometax.go.kr), and National Education Information System (NEIS, www.neis.go.kr) started to operate.

In terms of G4C, by establishing a single window portal for civil petitions, twenty types of administrative information in the five areas which are closely related to civil life such as resident, real estate, car, business and tax have been shared among public servants since November 2002. Thereby, the citizens could deal with around 680 types of civil petitions without sucmitting required documents because a public officer could directly check the related information online (Chung, 2009: 106).

As a result of informatizing the local level administration, twenty one tasks were informatized such as the record of land registration, rural, natural environment, health and welfare, local industry, petition, residents, automobile, building construction, finance and

tax, regional development, culture and sports, water, livestock, fisheries, forests, roads, transportation, civil defense, internal administration, family registration, and disaster. Informatizing local level administration was also effective in G4C by installing KIOSKs all across the country even though it was classified as a G2G activity. The KIOSKs were installed in 712 places and issued more than 1.2 million official documents until December 2002. Regarding online issuance of official documents, however, they could be only read online or delivered by mail rather than be printed because the anti-forgery features were not developed (e-Government Special Committee, 2003: 135).

In April 2002, the Home Tax Service was launched. Thereby, all national taxes could be notified and paid online. The service for filing tax returns covered nine items such as value added tax, withholding tax, and so on. According to the usage statistics in 2002, 12.5% of value added tax and 34.5% of withholding tax were filed online.

Second, in terms of G2B, the e-Procurement (KONEPS) was opened in September 2002. Totally, 1,968 public agencies called for 34,773 bids for three month after launching. Among them, 1,914 agencies gave public notice of 33,109 bids (95.2%) and 27,625(83.4%) were bidden through the e-Procurement (e-Government Special Committee, 2003: 294). In 2002, as an estimated economic effect of the e-Procurement based on the procurement data in 2001, KRW 3,225 billion of transaction costs were saved for a year (Samsung SDS consortium, 2002).

Third, in terms of G2G, as a result of diffusing e-approval and e-document activity, e-documents began to be distributed in the central administrative agencies from July 2000, between the central administrative agencies and local governments from September 2001, and among all administrative agencies by October 2002. The usage rate of e-approval was 21.2 percent in December 1998 before the activity started; however, it was increased to 92.6 percent in December 2002. The usage rate of e-documents was 39.9 percent in February 2001; however, it rose to 82.3 percent in December 2002, which showed the rapid diffusion.

Based on these accomplishments, the Korean government declared the completion of the e-Government foundation in November 2002. The performance received high praises internationally. In the latter part of the full promotion stage, Korea was ranked at the 15th and 13th country in the UN e-Government Readiness Index in 2002 (measured in 2001) and 2003 (measured in 2002) respectively. Going through the full promotion stage, Korea was evaluated as an e-Government leading country in which the Transaction is possible (e-Government Special Committee, 2003: 290~300).

Even though an information system establishment project needed to be completed within a short period of time, the First e-Government Plan was implemented under a heavy time pressure because the project was formulated at the end of the presidency. For this reason, the e-Government Special Committee had three broad limitations: the selection and implementation of activities, the accomplishment of objectives, and the coordination of conflicting interests. First, in terms of the activity selection, the activities of the plan were chosen without enough survey for citizens' demand and in-depth examination due to

the lack of time even if the activities were selected after gathering the ministries' opinions. Moreover, in the process of implementation, the opinions of stakeholder, expert and NGO could not be reflected in the important decision-making. To be specific, in the case of the establishment of the National Education Information System (NEIS), it faced strong opposition from the Korean Teachers&Educational Workers' Union and NGO against collecting students' personal information by the central government after the NEIS was established. In the case of G4C activities, it should have been planned and implemented after the target and scope of the civil petitions which would be served online were clearly determined from the stage of BPR/ISP affairs. But it did not have enough discussions with the agencies which provide and use information. Thus, quite a few civil petitions which had been planned were excluded from the online service list in the course of interdepartmental consultation.

Second, the achievement of objectives could not reach the intended level in some activities because the systems were established without enough infrastructures for the system operation. Therefore, some activities to establish systems should be contented with the infrastructure installation to ensure just system launching.

Third, the e-Government Special Committee had difficulty in coordinating some severe conflict of interests among ministries. For instance, the eleventh activity, setting the pan governmental integrated computing environment, could not even start in spite of its appropriateness. It ended up as a research to find a proper direction for the integration (i.e. BPR). Any ministry could not execute the activity plan because of the sharp conflict for the initiative between the MIC (Ministry of Knowledge Economy at present) and MOGAHA (MOPAS at present). Of course, the First e-Government Plan led more cooperation and linkage among relevant ministries than other earlier e-Government projects. However, it still had limitations on sharing and co-utilizing information, connecting among administrative agencies or public services, and avoiding overlapping investment (e-Government Special Committee, 2003: 305~307).

1.3.2 Success factors

Despite these limitations, the e-Government project in the full promotion stage is judged to be a great success thanks to the energetic efforts of the e-Government Special Committee. There are four success factors in the First e-Government Plan. First, there were the president's interest in e-Government and informatization and the strong will to pursue them. His interest and will were explicitly expressed on several occasions. He stressed the importance of e-Government and informatization several times. Thus, the Senior Presidential Secretary for Policy Planning reported the current state of the e-Government project every week or every other week and the special committee reported to the President face to face every six months.

Second, there was a strong and specialized organization to push the e-Government project, the e-Government Special Committee. Even though there was no legal basis for the special committee, it could have a channel to report to the President directly through a closest connection with the Presidential Secretariat. The Senior Presidential Secretary for Policy Planning reported to the President and attended the meeting to check and coordinate the e-Government project. Also, the Secretary for Policy took the position as an assistant administrator of the special committee and a co-head of the supporting team for actual work, and the Administrators for Policy Planning took charge of the e-Government project (e-Government Special Committee, 2003: 85). The MOGAHA, MIC, and Ministry of Planning and Budget followed and cooperated with the coordination of the special committee due to the close relationship between the Presidential Secretariat and the special committee. The committee could secure its professionalism by including seven experts from the private sector in seventeen committee members, and check and coordinate the project in the breakfast meetings every two weeks without formality and constraint, which totaled to fifty three.

The third factor was the Informatization Promotion Fund. It enabled the government to secure the necessary financial resources for the multiyear project and overcome the rigidity of the existing budget system like the investment first and settlement later strategy in the foundation establishment stage. It also helped to ease the issue in the risk and liability caused from the introduction of new technology to the public sector. The fund was provided for the e-Government policies and programs of ministries as a form of matching fund and gave an incentive to risk taking. The institutional strategy which led private providers and contractors to take a risk is important in the given situation where the probability for success appeared low and competence in IT was not yet established (Song&Cho, 2007: 32).

The fourth factor was the establishment of the high-speed information network. The establishment of the high-speed information network not only enabled the smooth flow of information in the government, but also determined the level of utilization of e-Government services in the public sector. No matter how good online e-Government services are, if the high-speed information network is not established in the public sector, citizens and businesses are more likely to visit the governmental agency rather than use the online e-Government services. The high-speed information network which was rapidly established during the Kim, Dae-jung administration radically changed the e-Government environment from the modem based network, where only a limited number of people could access to the online e-Government services, to the high-speed information network where a larger number of people can access to them.

1.4 Advanced Stage (2003~2012)

1.4.1 Outcomes and Limitations

In the advanced stage, the e-Government performance became more visible and internationally received more recognition compared to other periods. It can be classified into G4C, G2B/G4B, G2G, infrastructure, and international evaluation.

First, in terms of G4C, applications for 3,020 types of civil petitions could be demanded and 1,208 types of official documents could be issued online and printed by 2010. It was a noticeable increase compared to 2002 when 399 types of civil petitions could be demanded and 8 types of official documents could be issued. In addition, in response to the rapid diffusion of mobile devices, 10 types of documents could be read through smart phones in 2011, and the number of service type will be increasing.

As a result of advancing the HTS, the types of taxes which could be filed online were increased. When the HTS was launched in 2002, just nine items could be filed, and corporate tax and income tax could not be filed online. In December 2007, 298 types of taxes (91.7%) out of 325 types could be filed; in 2011, all thirteen tax items could be filed. Also, a cash receipt system for grasping income of each business and the year-end tax adjustment were added in the HTS. In addition, 165 kinds of civil petitions have been dealt with since November 2010. As the [figure 5-4], the usage rate of online filing maintains more than 80% from 2005 which exceeds the ordinary usage rate of OECD countries, 30~40%. As the figure 5-5, the usage rates of online payment were 24.37% in the number of times and 26.64% in the amount of money in 2009. Thanks to these outcomes, the National Tax Service achieved the ISO 20000 Certification in 2008 which is an international standard on IT management (National Tax Service).

As a result of economic effects of HTS, KRW 350 billion of social cost in 2005 and KRW 420 billion in 2006 were reduced. Among them, KRW 250 billion in 2005, KRW 300 billion in 2006 were saved thanks to the reduction of transportation expenses and labor costs. KRW 100 billion of administrative cost in 2005, KRW 120 billion in 2006 was saved due to decreased paper bills (National Tax Service, 2006).

Second, in terms of G2B, the e-Procurement system, KONEPS (www.g2b.go.kr) established in the full promotion stage became stabilized in 2005 and its performance has been visible. In 2009, 70 percent (KRW 85.7 trillion) of the total public procurement was conducted online; more than 42 thousand public agencies and 195 thousand private agencies have used the KONEPS since 2010.

According to the reports conducted in 2005 and 2009, the economic effect of the KONEPS was estimated at approximately KRW 4,537.6 billion in 2004 and KRW 8,517 billion in 2004. The saved cost belonged to companies thanks to the decrease in the number of agencies to be visited and documents to submit. For examples, the public sector saved KRW 1,440.6 billion in 2008 mainly in the processes of tender notices, drawing up contracts, and sending the written contracts; on the other hand, the private sector saved

KRW 6,611.2 billion mostly in the courses of submitting applications for bidding and bidding participations (Lim and Lee, 2005, Lim, 2006).

In terms of G4B, the "Business Supporting Plus G4B (www.g4b.go.kr)" which is the single window for business affairs began to operate. Online information about 1,887 types of business affairs in eighteen fields of fifteen governmental agencies was offered. Thereby, the required time and the process to establish a company was simplified from fourteen days with eight stages to five days with two stages.

Third, in terms of G2G, the business support systems for the Blue House and the administrative agencies have widely been used. The President can offer an opinion and comment on the report of secretarial staff through the business support system for the Blue House, and the opinions and comments are recorded in the Presidential Archive. The support system sets a condition to get on with more novel and creative work by reducing the time needed to prepare and attend a meeting, which is a large part of the secretariat function (MOPAS&NIA, 2008: 144).

The business support systems for the administrative agencies, the On-Nara BPS system is used in all central government agencies (58), all local level administrative agencies (16), and some community level administrative agencies (12). In the system, every governmental business is systematically classified, and the administrative business is more efficiently conducted by standardizing and systematizing the business process from planning, scheduling, and performance management to decision-making. The governmental decision-making process and its results have been recorded and shared through the On-Nara system, which has improved the transparency, responsibility, and democracy of public administration.

In addition, the range of administrative information sharing was expanded form 20 types of information 269 in administrative agencies in 2003 to 92 types of information in 442 administrative agencies in 2010.

These accomplishments were highly appreciated from abroad. Especially, Korea, which only ranked as the 15th country in the UN e-Government Readiness Index in 2001, was ranked at the top of the list in 2010 because of the continuous e-Government policies. Korea also ranked first in the UN E-participation Index in 2010.

The excellence of Korean e-Government is recognized in international e-Government awards as well as international e-Government indices. The seven initiatives of the five Korean government institutions received the UN public service awards in 2011. Among them are the two initiatives of the MOPAS, the agency in charge of the overall Korean e-Government. The Information Network Village (INVIL) won the first place in the category of fostering participation in public policy-making decisions. The 24-Hour E-Services for the Public (Minwon24) won the second place in the category of improving the delivery of public services.

Thanks to these performances, Korea has exported e-Government. The exports amounted to USD 9.8 million in 2007, 27.3 million in 2008, 66.7 in million in 2009, 148 million in 2010, and 235 million in 2011.

However, the Korean e-Government still has limitations and challenges in combining the high technical skills and solid infrastructures with the development of democracy. The earlier e-Government policies were focused on technical development and visible outcomes. However, the e-Government in Korea is on the stage of applying e-Government to national governance in a democratic and rational manner beyond simply providing administrative information and receiving opinions.

1.4.2 Success Factors

There are success factors in the advanced stage. The first one was the linkage between the government innovation and e-Government. Of course, e-Government was considered to be a tool of government reform during the Kim, Dae-jung government; however, this keynote was more strengthened in the Roh, Moo-hyun government. It can be seen in the fact that the e-Government Professional Committee and the e-Government Special Committee were established under the Presidential Committee on Governmental Innovation and Decentralization. Also, the intention to combine the government innovation with the e-Government project was revealed from the statement in the meeting of state affairs right after the inauguration. Therefore, the activities to improve the way of governmental business process such as the BPR (Business Process Reengineering) and BRM (Business Reference Model) activities in the Second e-Government Plan.

The second one was the presidential insight into e-Government and his leadership to coordinate different opinions. The President Roh, Moo-hyun had not only a great interest in e-Government but an insight into it. He played a significant role in designing the business support systems for the Blue House as an end-user when developing it. The presidential interest and insight were expressed directly by intervening in and coordinating an important decision-making about the e-Government project. To be specific, it was inconvenient to use these two systems at the same time because of the overlapping functions between the newly developed On-nara system and the existing e-document system (E-nara system). The problem was solved by the presidential direction to integrate the two systems and remove the unnecessary system. Additionally, the President directly coordinated the conflict for the initiative of the NCIA (National Computing and Information Agency) establishment between the MOGAHA and MIC. Even if there was not a person in charge of e-Government in the Presidential Secretariat, the President could make it possible because he had faith in e-Government.

Third, there were the learning for public servant, the discussion with them, and persuasion. To increase the effectiveness of e-Government policy, the public servant's comprehension of e-Government and the e-Government policy being pursued is required. However, many

public servants had difficulties in understanding the concept and learning function of new business process through e-Government even though the advanced stage started. Especially, it was not easy for the senior public officials who were not familiar with computer and information system to acclimate themselves to the new business system. In this situation, some of them are likely to feel anxiety that many things to learn and know suddenly occur, and repel to the e-Government. The MOGAHA offered the training of the On-nara system for the ministers, vice-ministers, and senior public officials to lead the system to take root in the government several times during the Second e-Government Project. Also, there was a reluctance and opposition of the public servants to the informatization of local finance which required a new way of conducting business because the double-entry bookkeeping, accrual base accounting, and performance budgeting system were not familiar to them at that time. The MOGAHA designated the twenty one local government offices as the mentor agencies to explain the new system and institution and to convince the public servants of other local government office of them, and let the public servants of other local government office to take periodical training and discussion about them. As the result of these efforts, a lot of public servants sympathized with the e-Government policy.

Table 6-1 | Annual Numbers of Public Servants who got Informatization Training

(Unit: Person)

	Full Promotion Stage		Advanced Stage						
Type of training	2001	2002	2003	2004	2005	2006	2007	2008	2009
Offline	10,026	8,695	6,527	6,246	6,256	5,210	4,226	3,797	4,982
Online	456	1,383	1,803	2,403	3,592	3,069	4,412	7,355	5,661
Total	10,482	10.078	8,330	8,649	9,848	8,279	8,638	11,152	10,643

Source: Korean government, 2010: 248

The forth factor was modifying related laws and regulations. A primary objective of the introduction and operation of e-Government is to change and improve the existing working practices and procedures in government. However, if the related laws and regulations are not reorganized, there will not be a significant change in them compared to the previous government before the introduction of e-Government; therefore, the performance of the e-Government such as the improvement of internal efficiency and public services will be insignificant. Even if an e-Government system is established in terms of technology, the thought and action of public servants and citizens will not be changed if the laws and regulations to operate the e-Government are not prepared for it. For example, even though the H/W and S/W are equipped for the distribution of e-documents, the e-documents cannot

be diffused if only the paper document is institutionally acknowledged. The first activity of the e-Government Project, digitalizing the whole document process, could be implemented by altering the e-Government Act and the Regulation of Business Management which offered the legal basis of the usage of e-document in the administrative agencies. Also, the sub-activity of advancing the PPSS (Personnel Policy Support System) could be implemented by amending the Regulation on Personnel Records and the Transaction of Business twice. The fact that arranging the institutions related to the realization and safety of e-Government was one of the thirty one activities means the importance of organizing the laws and regulations related to e-Government. During the Second e-Government Project, 14 laws, 325 Presidential decrees, and 263 enforcement regulations were revised (MOPAS&NIA, 2008: 409).

In summary, each development stage in Korean e-Government had constraints and solutions as shown in Table 6-2. The constraints can be classified into internal factor, external factor, and conflict between stakeholders. As the constraints of the introductory stage were overcome in the foundation establishment stage, those of the foundation establishment stage were regarded as the same in the introductory stage.

Table 6-2 | Constraints and Solutions of Each Development Stage in Korean e-Government

Stage	Introductory (1978~1986)	Foundation Establishment (1987~1996)	Full Promotion (1996~2002)	Advanced (2003~2012)
Con-straint	- Doubt about success in e-Gov project (internal) - Absence of an organization to coordinate and pan Gov project (external) - No strategy to secure financial resources for a mid/long-term project (internal)	The same constraints as the introductory stage	- The Computing Network Steering Committee became weak (internal). - Investment first-settlement later was abolished (internal). - Priority of e-Gov project was declined because of financial crisis in 1997 (external). - A conflict of the enactment of the e-Gov Act (conflict) between MOGAHA and MIC	- Anxiety and repulsion of public servants about e-Gov (internal) - A conflict for the establishment of the comprehensive governmental computing centers (conflict) between MOGAHA and MIC
Sol-ution	The constraints could not be overcome in the introductory stage	- Leading role of technocrats - The National Basic Computing Network Projects and the Administrative Computing Network Basic Plans were formulated. - Investment first-settlement later	- e-Gov Special Committee - Informatization Promotion Fund - Economic recovery and establishing infrastructure through the High-Speed Broadband Network Projects	- Informatization training, discussion, and persuasion for public servants - Coordination by the President

2. Implications for Developing Countries

2.1 Prioritizing the e-Government Activity

2.1.1 Selection of the Priority Activity

The success of an e-Government project will be visible after computerization and informatization in various fields of society. However, it is not easy for developing countries to pursue e-Government projects in most fields of society due to the lack of human, material, and monetary resources, as was the case in Korea in the past. Korea has pushed the e-Government project focusing on the areas which have a considerable effect on the life of citizens and government affairs. Based on the experience and the course of e-Government development in Korea, developing countries should set the first priority as follows:

First, in terms of the infrastructure for e-Government, EA (Enterprise Architecture), BCN (Broadband Communication Network), a comprehensive government data center, and PKI (Public Key Infrastructure) should be established. Second, in terms of G2G, groupware should be prepared. Third, in terms of G4B, business e-registration, e-tax, and e-Procurement systems are important. Fourth, in terms of G4C, the governmental representative portal site, the computerization of resident registration, a national education information system, and systems for the management system of tax, passport, car, real estate, and immigration should be prepared.

2.1.2 Decision of the activity priority

Even if all the projects mentioned above are important to the development of e-Government, the projects should be implemented in order of precedence because they cannot be implemented at the same time. The effectiveness of e-Government project and the speed of development depend upon the order of priority.

Above all, infrastructure projects such as EA, BCN, a comprehensive government data center, and PKI should be established prior to the other projects. The infrastructure projects have three features: first, their scale is large and they require a long time to develop; second, they should be continually pursued as the information technology develops; third, a more effective e-Government can be established if infrastructures are established before the development of other e-Government services. Therefore, the infrastructure projects can be classified as the top priority.

The governmental representative portal site (G4C site), a single window which provides major public services, can be developed without too many prerequisites. Of course, it is ideal for all public services to be seamlessly offered through the governmental representative portal site after all public services are computerized and integrated. However, the public services should be offered step by step because the computerization of every public service requires a lot of time. The development stage of e-Government should be elevated by adding

more services and functions considering the level of computerization of governmental affairs. Also, the information on the G4C site should be periodically updated.

The computerization of resident registrations is an essential prerequisite for the establishment of the management systems for tax, passport, car, real estate, education information, and immigration. In the case of the relationship between passport management and immigration management, the former should be established before the latter. In G2B and G4B, business registration is an essential prerequisite for the e-customs and e-Procurement services because business should be identified in the procedure of customs and procurement affairs.

EA is the organizing logic for business processes and IT infrastructure reflecting the integration and standardization requirements of the governmental operating model. It helps to minimize the compatibility problem in integrating or connecting each e-Government system. However, the existing systems should be analyzed because there are already many systems being developed and operated and it takes a lot of time and cost to integrate and standardize them. It is efficient to adopt the standardized model into existing systems after their analysis.

The groupware which includes e-document and e-approval systems is also a priority project because it can help to improve the process of administrative affairs such as paperless transactions, and reduce the required time of approval. Additionally, the groupware needs PKI for security since the businesses are conducted online. The PKI project can be excluded at the early stage of e-Government; however, it is critical at the stage where several civil petitions are dealt with and taxes and fees are paid online. Also, the personal and business information management system should be established before the PKI project as it requires exact information about persons and businesses.

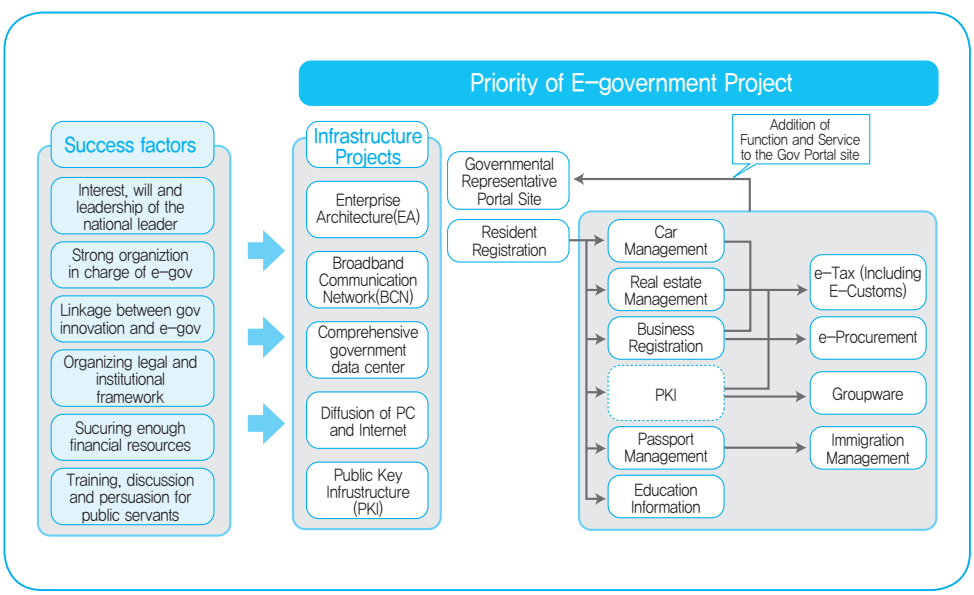
In summary, the first priority projects should include the establishment of the comprehensive government data center and the high speed information network, and the diffusion of the internet and PC. The second priority projects include building up the G4C site depending on the e-Government level, and paving the way to comprehensively manage several e-Government services by conducting the EA before the establishment of each e-Government service system. The third priority project is to computerize the resident registration. The forth priority projects are to build up the groupware and the management systems for passport and business registration based on the personal information management system. Finally, the establishment of the management systems for education information, real estate, car, immigration, customs, procurement and tax should be included in the e-Government project (Park&Seo, 2010: 4180~4182).

However, the success of e-Government project is not guaranteed only by the order of priority. The e-Government can be successfully established and operated, and make substantial accomplishments if several success factors work together during the developmental course in Korea. As the first success factor, the interest, the will and the leadership of the national leaders (e.g. president, prime minister) in pursuing e-Government

are very important. Even though national leaders are typically not familiar with and are not specialized in information technology, e-Government can be effectively pursued if the national leader demonstrates a strong leadership like President Kim, Dae-jung. Second, a strong organization should be established based on the guidance of the national leader in order to effectively steer and coordinate the e-Government projects, which require the participation and compromise of several ministries. Third, e-Government projects should be linked with the administrative innovation. Establishing e-Government itself should not be the ultimate goal, and BPRs should be conducted with e-Government projects so that e-Government can lead to increase administrative efficiency and citizens' convenience. Fourth, appropriate legal and institutional framework should be set to address the changes in the technological environment and e-Government project. Fifth, the strategy to secure enough financial resources and overcome the limitation of annual budgeting should be prepared. Sixth, discussions with public servants should be conducted in order to improve their understanding of the e-Government project, persuade them, and to prevent them from having objections to the changes in job environment. Also, training programs that can help them familiarize with the e-Government systems should be included.

In conclusion, [Figure 6-1] shows the flow chart of e-Government including the success factors and the priority of activities.

Figure 6-1 | Success Factors and Activity Priority Flow Chart of e-Government Project



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(http://contents.archives.go.kr/next/content/listSubjectDescription.do?id=001964&pageFlag=A)

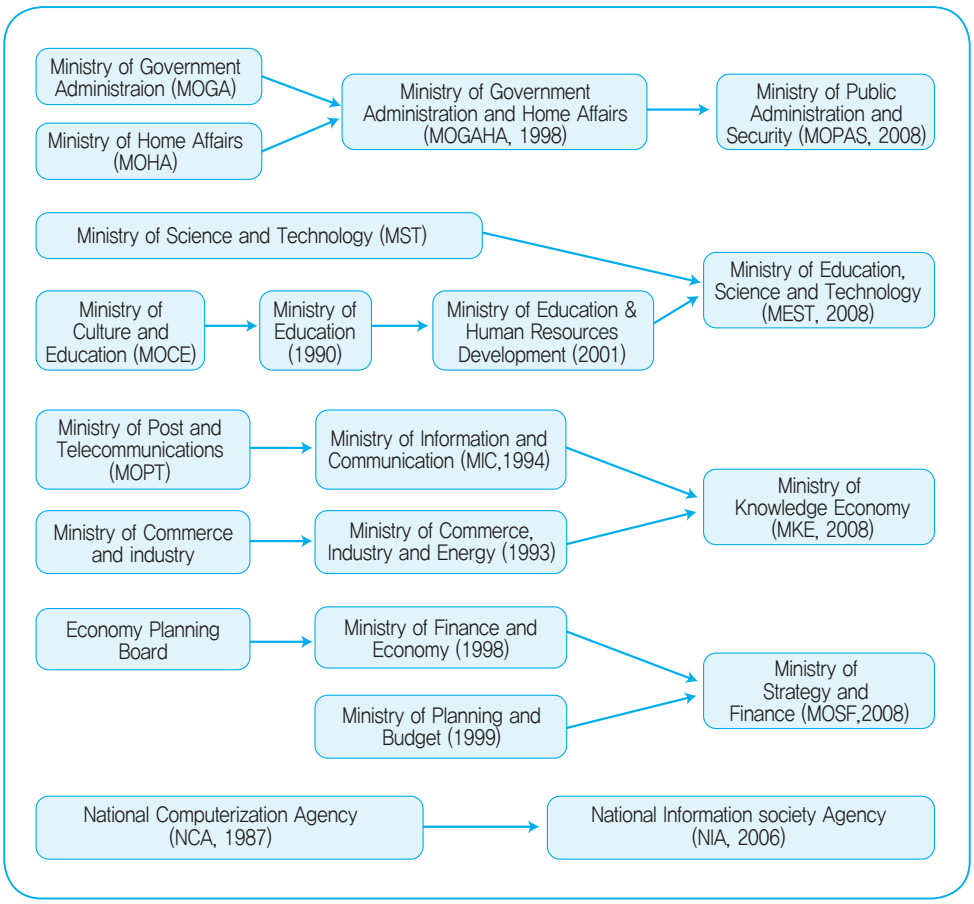
Appendix 1. Major Contents of Each e-Government Development Stage in Korea

Stage	Introductory Stage (1978~1986)		Foundation Establishment stage (1987~1996)	Full promotion stage (1996~2002)	Advanced stage (2003~2012)	
Government	Park, Chung-hee (71~79)	Chun, Doo-hwan (81~88)	Roh, Tae-woo (88~93)	Kim, Young-sam (93~98) / Kim, Dae-jung (98~03)	Roh, Moo-hyun (03~08)	Lee, Myung-bak (08~12)
Legal Framework	· Rule of Administrative Computerization Committee (75.8) · Rule of Administrative Task Computerization (79.6)	· Rule of Administrative Task Computerization (reformed in Jan 1982) · Computing Network Act (86.5)	· Computing Network Act (86.5) · Framework Act on Informatization Promotion (95.8)	· Framework Act on Informatization Promotion (95.8, reformed in 1999) · Rule for sharing administrative information (98.4) · e-Signature Act (99.2) · Act on promoting the usage of information network and information protection (01.1) · e-Gov Act (01.3)	· e-Gov Act (partly reformed in Jan 2007) · Act on efficient introduction and operation of information systems (05.12)	· e-Gov Act (fully reformed while absorbing other acts in Feb 2010) · Framework Act on National Informatization (fully reformed from the Framework Act on Informatization Promotion in May 2009)
Project and Plan	· The 1st Basic Plan of Administrative Computerization (78~82)	· The 2nd Basic Plan of Administrative Computerization (83~86) · Administrative Computing Network Project Plan was confirmed (85.5) - The forerunner of the 1st Administrative Computing Network Basic Plan	· The 1st and 2nd National Basic Computing Network Projects (87~91, 92~96) · The 1st and 2nd Administrative Computing Network Basic Plans (87~91, 92~96) · 1st High-Speed Broadband Network Project (95~97)	· The 1st and 2nd National Informatization Promotion Master Plans (MIC, 96~98, 99~01) · 2nd High-Speed Broadband Network Project (98~00) · e-Gov Vision and Strategy (MOGAHA, 99~02) · Comprehensive e-Gov Action Plan (MOGAHA, 98~02) · The 1st e-Gov Plan (e-Gov Special Committee, 01~02)	· 3rd High-Speed Broadband Network Project (01~05) · The 3rd, 4th and 5th National Informatization Promotion Master Plans (02~06, 03~07, 06~10) · The 2nd e-Gov Plan (03~07)	· National Informatization Basic Plan (08~12) · National Informatization Implementation Plan (09.4) · Smart E-Gov Plan (11~15)
Strategy	· Centralized computerization by one ministry (MOGA) · Five-year project		· Top-down · Invest first and Settle later · Concentration on the areas which have great ripple effects · Linking the e-Gov project with fostering the domestic ICT industry	· Establishing control tower of e-Gov project · e-Gov as a tool of administrative reform and a major activity of national informatization · Usage of the Informatization Promotion Fund · Simultaneously establishing several information systems in a short period	· Linking e-Gov with administrative innovation · User-orientated e-Gov · Setting the goals and performance manage by stage · Linking the e-Gov project with IT industry	· e-Gov project in the framework of national informatization · e-Gov based on mobile IT equipment

Stage	Introductory Stage (1978~1986)		Foundation Establishment stage (1987~1996)	Full promotion stage (1996~2002)	Advanced stage (2003~2012)	
Major Activities (Contents) of the Projects and Plans	• 80 tasks of 40 agencies were computerized (car registration, driving license, and passport issuance. • Co-usage of computers and establishing network in each ministry • Establishing computing centers in each province and connecting the computing network of 33 cities		• Resident registration, real estate, car, customs, employment, and statistic data management (1st project) • Social welfare, postal service, sea freight, intellectual rights and weather information, procurement lists, and fishing boats management (2nd project)	• G4C, HTS, G2B, PPSS, NEIS, Informatizing local level administration, Connecting the four social insurance information systems, e-approval and e-document, National finance information system, Governmental seal and private e-signature, and Setting a pan governmental integrated computing environment	• Electronic business processing, administrative information sharing, BRM, advancing G4C and G2B/ G4B, e-Participation, Integrating and standardizing information resources, advancing information protecting system, Specializing manpower and organization for informatization	• Establishing a single window which can handle all kinds of public services; establishing an integrated Gov portal; advancing G4B and informatization management system • Establishing a mobile e-Gov, e-Office; advancing wireless network; establishing cloud environment
Policy making and coordinationw Organization	• Administrative Computerization Committee under the MOGA (75)	• Information Industry Promotion Committee (83~84) • National Backbone Network Steering Committee (84.3)	• Computing Network Steering Committee (87.5) - Administrative Computing Network Committee (One of Working-Level Committees) - Operating authority was transferred to MOPT (89.6)	• Informatization Promotion Committee (96.6) • e-Gov Special Committee (01.1)	• e-Gov Professional Committee (03.5~05.5) • e-Gov Special Committee (05.6~06.1)	• President's Council on Information Strategies (09.11) - Assistant administrator (Minister of MOPAS)
Implementing Organization	• MOGA (put plans of each ministry together)		• MOGA, MOPT, NCA • MIC (reformed from the MOPT in Dec 1994)	• MIC, MOGAHA, Ministry of Planning and Budget, NCA	• MOGAHA • NIA (changed from NCA in Oct 2006)	• MOPAS • NIA
Financial Resource	• Own budget of each ministry		• Invest first and Settle later (87~91, 1st project) • Own budget of ministries (92~96, 2nd project) • Informatization Promotion Fund (93.1~96)	• Informatization Promotion Fund • General account budget	• Informatization Promotion Fund (03~05) • General account budget	• General account budget

Stage	Introductory Stage (1978~1986)		Foundation Establishment stage (1987~1996)	Full promotion stage (1996~2002)	Advanced stage (2003~2012)	
Major Outcome	• The tasks of car registration and issuance of driving license were computerized (82) • Issuance task of passport was computerized (83)	• Administrative Computing Network Basic Plan was confirmed (85.5) - The forerunner of the 1st Administrative Computing Network Basic Plan	• The management tasks of car, customs formalities and bonded goods (90), the personal information of citizen, real estate and the 20 national basic statistics (91) were computerized. • The resident moving in management system was integrated with the moving out management system (93) • The computing network of passport issuance opened (94), and national service began (95)	• The gov representative website, public petition service and real estate registration service were launched (98) • The statistical information system service was launched, and the computerization of family register was completed (99) • The single window e-petition service (G4C), KONEPS (G2B), HTS and NEIS were opened (02) • Declaration of the completion of the e-Gov foundation (02.11)	• Top five country of the e-Gov Readiness Index (04) • e-diplomacy (06), On-nara, dBrain (07) and Local Finance system (08) were launched. • The number of the gov't agencies which used the e-document system was raised. (46 in 2002→762 in 2007) • Overseas export and consultation (04~07, 47 times)	• Administrative information sharing project was completed. (08) • Civil petitions service has been advanced. (3,020 online application services, 1,208 real-time issuance services in 2010) • G4B web site has been advanced. • Overseas export and consultation (USD 235 million in 2010) • Top country of the e-Gov Readiness Index and the E-Participation Index (10)

Appendix 2. Changes of the e-Government related agencies in Korea



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