E-Government in Developing Countries

Lessons Learned from Republic of Korea

Hee Joon Song

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Contents

Foreword

During the last fifteen years, many governments in the world have become aware of the potential of the Information Technologies (IT) in enhancing their services and increasing their efficiency. They have deployed web portals and government online services in order to make the government's services and employees directly and easily accessible to their citizens and to improve the use and dissemination of information.

The UNESCO E-government Tool Kit for Developing Countries was issued in 2005 in collaboration with India's National Informatics Centre (NIC). It aims to build and strengthen the understanding of all those involved in the planning and execution of E-government projects. It includes information on various aspects of E-government from basic concepts to aspects related to implementation of E-government projects, and also incorporates experiences from different parts of the world. The objective of the Tool Kit was to equip the users with valuable and useful information that would guide them through various phases in their E-government initiatives.

It is recognized that there is a somewhat significant gap between advanced and developing countries in E-government growth. However, it is believed that developing countries can learn from developed E-government countries and that the process will alleviate the digital gap which is a major concern of UNESCO. To bridge the E-government gap, a professor, who was involved in introducing E-government in South Republic of Korea, has undertaken a survey to update, add and enhance the toolkit for developing countries and to suggest possible alternatives based on his methodology about and experiences with E-government in South Republic of Korea.

An E-government maturity model provides guidance to define strategies for a better control of ICT (Information and Communication Technology) supported services: the first

level is changes in environment, the second is pre-implementation with identification of SWOT (Strengths, Weaknesses, Opportunities, and Threats) factors, the third is implementation concerning the management of development processes, and the fourth is the monitoring and evaluation phase, all built from the users', rather than from the organization's, viewpoint.

The toolkit and the evaluation come as one of the contributions to the implementation of the Plan of Action adopted at the World Summit on the Information Society (WSIS) that calls for implementing government strategies focusing on applications aimed at innovating and promoting transparency in public administrations and democratic processes, improving efficiency, and strengthening relations with citizens. One of the actions proposed is to develop national E-government initiatives and services, at all levels, adapted to the needs of citizens and business, to achieve a more efficient allocation of resources and public goods.

Sheldon Shaeffer
Director, UNESCO Bangkok
March 2006

Preface

This material is developed to help developing countries carry out E-government project, based on experiences and lessons of Republic of Korea. In spite of its relatively clear orientation, implementing E-government is considered as a learning process with a variety of trials and errors. Due to dynamics in the development of information technologies (IT) and continuous changes in the ideas and strategies of the government innovation corresponding to changes in people's expectation for the role of government, E-government becomes an evolutionary process.

This tool kit introduces critical tasks and best practices of Republic of Korea which fit to each sequence of implementing process for an information system; pre-implementation, implementation and post-implementation. For 40 years, Republic of Korea has successfully accomplished rapid economic growth, with a highly populated small country with scarce natural resources. Experiencing a great success in economic development, Republic of Korea has adopted a centralized development strategy for E-government, which is similar to the strategy for economic development.

Even though Republic of Korea is currently considered to be one of global leaders in terms of E-government, it continues to make efforts to develop and utilize better services. Therefore, a lot of failure cases as well as success ones can be examined in Republic of Korea, without mentioning ongoing projects to which a newly developed model is applied. Although several cases are introduced, it should be admitted that there has been some limitations as most of E-services currently provided are in Korean, making it difficult to approach.

E-government tool kit, developed based on Korean experiences, is expected to help decision makers, public officers, and private partners working for E-government gain comprehensive understanding on E-government.

Dr. Hee Joon Song

PART I. INTRODUCTION

CHAPTER 1

Mega-trends and E-governance

1.1. Globalization and Market Liberalization

Human society has been experiencing globalization and market liberalization since 1980s. Most countries cannot escape the impact of such mega trends, and developing countries with scarce natural resources need to actively cope with such trends for national development.

1.2. Democracy

Democracy has become a major trend since the collapse of the socialism in Eastern Europe and the military authoritarianism in South America in 1980s. For instance, in 1985, 67 out of 124 countries (54.1%) had an authoritarian government, 44 (35.5%) a democratic one and 13 (10.5%) a mixed form of government, while in 2000, 26 out of 147countries (17.7%) had an authoritarian government, 82 (55.8%) a democratic one, and 39 (26.6%) a mixed form of government (UNDP, 2002:15). A democratic government, established by people's choice, cannot help endeavoring to meet peoples' expectations.

1.3. Information Technology Revolution

Along with the expansion of democracy, information and communication revolution,

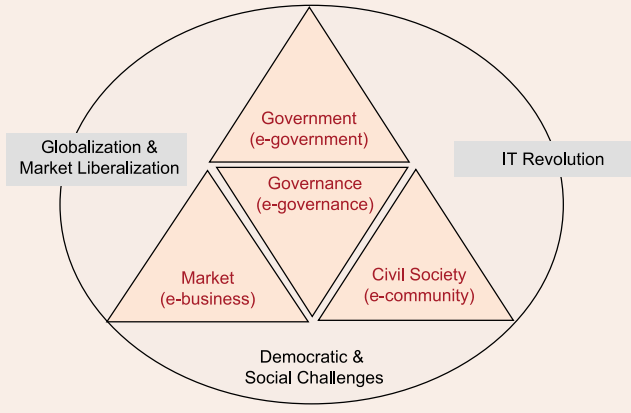
led by personal computers, the Internet and mobile phones, has also been evolving into the digital convergence of computers, telecommunication and broadcasting.

1.4. The Advent of E-governance

Globalization, democracy and IT revolution, have been changing the human society by closely interacting with each other. With such major trend, the concept of governing has also been transformed from one-way ruling by public power to cooperative governance by partnership between the government, market and civil society. It is E-governance with which public problems can be solved by IT based partnership which releases limitations in time and space and cognitive restrictions human-beings have. As industrial revolution in 19th century was inescapable, so people in 21st century will not be able to avoid such a huge change.

The nation responsible for protecting the lives and properties of people should actively cope with the concept of E-governance by adopting E-government. Under the impact of mega trends, the government establishes governance with which the market and civil society work together along with the government to solve the social problems. E-government, E-commerce and E-democracy are the core factors constituting e-governance.

Figure 1: The Advent of E-governance under Mega trends



CHAPTER 2

Conceptual Overview

2.1. Definitions

2.1.1. Various Concepts

A lot of people benefiting from a variety of information technologies often do not have precise understanding on what E-government is. Republic of Korea was rapidly informatized during 1990s. Yet, even the high level public officials didn't have clear understanding on E-government, not to mention ordinary people. Those who have some knowledge on E-government often fail to share the same concept, as they understand it from the view point of IT technologies, rather than as a way of government innovation. Therefore, the first task to carry out E-government project is to make stakeholders understand the concept, objectives, needs, scopes and contents of E-government.

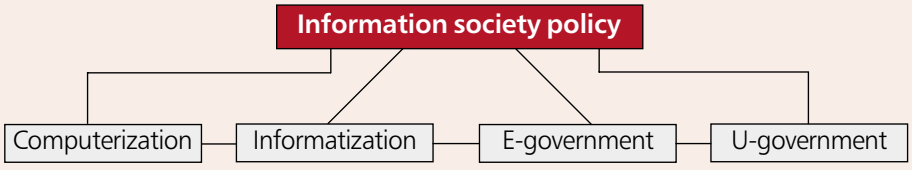
Many questions regarding E-government have been made focusing on its relationship with IT, information society, computerization, informatization, E-business, E-democracy, ubiquitous computing and the innovation of government. The meanings of these concepts are similar and often mix-used. Yet, the major common feature of these concepts can be said that their meanings change corresponding to the development of IT and the intensity of governmental innovation.

2.1.2. E-government

E-government is defined as the use of ICTs such as the Internet and the web as a tool to achieve better government by enabling better policy outcomes, higher quality services, and greater engagement with citizens (OECD, 2004:11). This definition is not far from those of not only international institutions (2002:1), but also academic scholars (Snellen, 2005:399, Holmes, 2001:2, Peristeras et al., 2002: 4). Simply, E-government means utilizing a variety of the Internet-based IT to achieve administrative objectives. The Internet is crucial, enabling one-to-many interaction between the government and people.

Originally, informatization was the container concept in which the combination of processes, started by computerization or the deployment of ICTs, was lumped together (Snellen, 2005:399). In Republic of Korea, computerization is understood as the establishment of administrative databases at the back office in Republic of Korea, while informatization as the promotion of use of IT including the distribution of IT devices, increase of access to IT services, literacy and digital divide. E-government is considered as carrying out governmental activities by using the Internet. The information society policy, dealing with the information society problem which is symmetrical to the industrial society, can be seen as the concept that includes all of such evolutionary scopes. The concept of E-government has been continuously evolving toward a new direction, according to the adoption of new IT or the degree of governmental innovation. Recently, Republic of Korea has started to actively accept the concept of ubiquitous government to its public services.

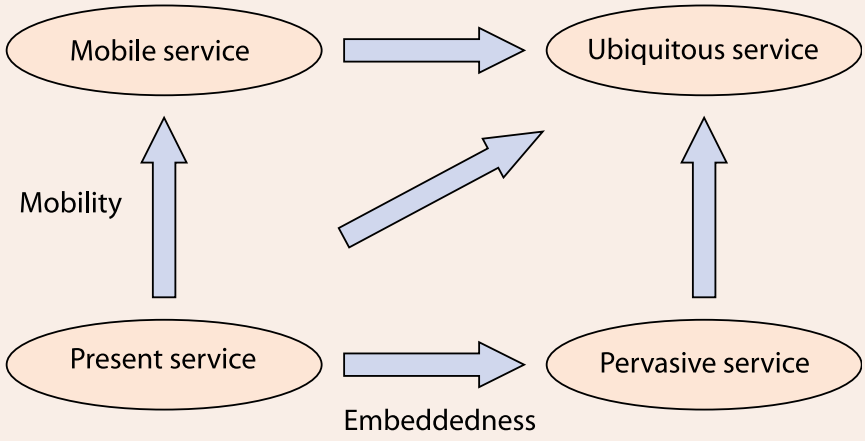
Figure 2: Evolution of the Concept of E-government



2.1.3. U-government

Ubiquitous government (U-government) is based on the mobility in telecommunication and embeddedness in computing. Ubiquitous services will become available thanks to mobile phones, DMB (digital multimedia broadcasting), BcN (Broadband Convergence Network) which allows convergence of wireless and wired networks, and IPv6 which enables provision of infinite Internet addresses. Radio Frequency Identification (RFID) makes any service to any one at any time in any place possible by embedding electronic chips into moving objects including humans as well as fixed environments. In short, the ubiquitous environment has features like disappearing networks, invisible computers and pervasive services.

Figure 3: Advancement toward Ubiquitous Computing



Source: Communications of the ACM (2002.12)

2.1.4. Comparison of Conventional, Electronic, and Ubiquitous Government

C-government, E-government and U-government are different in their operational principles, service time, space and methods. For example, U-government can serve people the best through ubiquitous computing.

Table 1: Evolution of Government

	C-government	E-government	U-government
Principles	Bureaucratic process (phone, fax)	Process reengineering using IT (PC, internet)	Seamless integration and linkage (RFID)
Service time	8 hours a day, 5 days a week	24 hours a day, 7 days a week	24 hours a day, 365 days non-stop
Service space	In-person visit, fax, phone	Customer's home and office using the Internet	Customer's location and physical place
Service form	Several visits to offices	Multi-clicks to web portals	One time access to needed service

2.2. 'System' Framework

E-government can be framed by the concept of 'a system', defined as a set of interrelated parts.

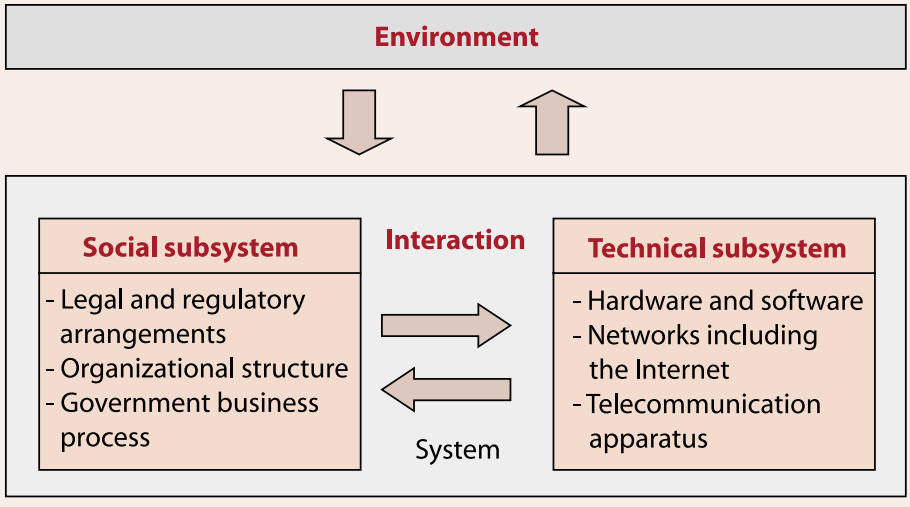
Firstly, the whole system consists of parts (subsystems) in vertical and hierarchical order. E-government, which is one component of e-governance, along with e-commerce and e-democracy, is made of a lot of subordinate parts.

Secondly, resources flow between the parts of the system, both vertically and horizontally as input, throughput, output and feedback. The resources moving in the system include not only physical resources such as people and information, but also intangible ones like demand, support, and expectations of people.

Thirdly, the system is open to the environment outside and actively interacts with it. Interacting flexibly with the outside environment, the system can improve its ability of adaptation.

With three features of the system being considered, E-government can be seen as a socio-technical system consisting of technical subsystem (electronics) and social subsystem (government) which are interwoven with each other.

Figure 4: E-government as a Social-technical System



2.3. Actors

2.3.1. Government

The government comprises the central and local governments and its subsidiary agencies. The central government plays a main role in designing and implementing E-government. In particular, it is required to coordinate the whole E-government project in pursuing the vertical integration and horizontal connection of all governmental organizations. This concept is far beyond the level of informatization carried out at the level of decentralized organizations.

Local government is the forefront window to which people have direct access through E-government services. Aiming at the seamless integration of services, E-government can create certain tension between the local government (centrifugal force) that considers local characteristics important and the central government (centripetal force) that regards the provision of common services essential. Therefore, E-government should be designed to have balance between autonomy at the regional level and consolidation at the central level.

State owned enterprises and non-governmental public bodies are to be integrated into the nation-wide networks, seamlessly. About 550 organizations including agencies to promote industries, cultures and arts, sciences and technologies exist in Republic of Korea and are trying to integrate or connect their systems through the E-government project. Some organizations such as National Computerization Agency and Republic of Korea Information Security Agency are even leading the national informatization.

2.3.2. Business

Business entities are the main actor of the market and the beneficiary of public services at the same time. They are also contractors for outsourcing services such as developing the systems for the E-government project. With the trend of globalization, a lot of top global companies have been participating in implementing the E-government projects of developing countries.

2.3.3. Citizen and Civil Society

Citizens play a variety of roles in society; they can be viewed as service recipients, partners in service provision, overseers of performance, and taxpayers (J. J. Dilulio, Jr. et. Al, 1993:49). As taxpayers, they expect the public administration to be efficient, and as service recipients, they demand to get quality services. When they are partners in service provision, they are required to effectively accomplish their work. As overseers supervising the performance of public officers, citizens tend to value the responsibility of public officers. Non-governmental organizations (NGOs) have been voluntarily made by citizens pursuing a variety of issues.

The civil society in Republic of Korea has started to grow during 1980s when the nation has undergone the democratizing process, and over 20,000 NGOs are flourishing in 2005. These NGOs have also been participating in the E-government project in various ways.

Table 2: Customer Perspectives with Matching Values of E-government

Customer perspective	Value
Citizens as taxpayers	Efficiency
Citizens as service recipients	Responsiveness
Overseers of performance	Accountability
Partners in service provision	Effectiveness

Source: John J. Dilulio, Jr., Gerald Garvey, Donand F. Kettl (1993:49).

2.3.4. Public-Private Partnership

Good partnerships among the government, businesses, the civil society and expert groups can contribute to maturing E-government. Yet, such public-private partnerships (PPP) can be created when there exists the market economy and the democracy where the mechanism of check and balance among sectors are well functioning. Because of this fact, the PPP has been used as a way for social integration in developed countries where the tension between the governmental regulation and the market autonomy to create fair and free market often occurs. However, it can be rather harmful for the countries where market economy and democracy are poorly established to put too much emphasis on the PPP, as it can justify the informal ties between the government and the market, hampering the efficiency and transparency of E-government projects.

2.4. Interactions

Interactions among the government, businesses and citizens can be categorized into 9 types according the flow of input, transaction and output within the system framework. E-government is composed of 5 types of interaction, namely C2G, B2G, G2G, G2B, G2C, while e-commerce includes C2B, B2B, B2C, and e-civil society C2C as the types of interaction. However, it does not mean that the scope of E-government is larger than E-commerce or e-civil society. By switching G, B, and C in the Figure, each entity can get the same result.

The interaction between E-government and businesses/citizens can be explained by B2G and C2G, in which the government receives information, resources, demand and support as inputs from businesses (B) and citizens (C) through the front office. The inputs include a variety of demands from businesses and citizens such as an application for business start-up, an application for public grievances and protests.

Secondly, the government (G) processes internally the inputs from businesses and citizens at the back office (G2G). The back office includes work processes within the organization and more composite work processes occurred across different organizations. Cross-work between organizations presupposes information-sharing, and most of policies and public services are dealt with while information is under transaction.

Thirdly, policies or public services are delivered to businesses (G2B) and customers (G2C) as outputs, which include public services like approval for civil applications, along with welfare services, regulation and dissemination of information.

Figure 5: Electronic Interactions of E-government

		To (destination)		
		G (Government)	B (Business)	C (Citizen)
From (origin)	G	G2G Back office conversion	G2B Front office output	G2C Front office output
	B	B2G Front office input	B2B (E-business)	B2C (E-business)
	C	C2G Front office input	C2B (E-business)	C2C (E-community)

2.5. Maturity Levels as a Moving Target

As aiming at a moving target is hard, so is it difficult to set the level of national E-government to achieve because IT evolves and the paradigm for government innovation changes continuously. Yet, the final goal of E-government is to attain seamless integration among agencies. Finding that E-government has been evolving or maturing to one-way direction, international organizations classify the maturity level of E-government. Such classification can help the government decide the future direction and create strategies by allowing it to estimate its maturity level of E-government.

The UN Model is composed of 5 levels of E-government; 1) Emerging, 2) Enhanced, 3) Interactive, 4) Transactional, 5) Seamless (UNDPEPA/ASPA, 2002:2). At the OECD model, the interaction between the government and people in the policy decision-making process goes through 3 levels of evolution; 1) one-way information provision, 2) two-way consultation, 3) active participation based upon partnership (OECD, 2004).

Figure 6: UN Maturity Model of E-government

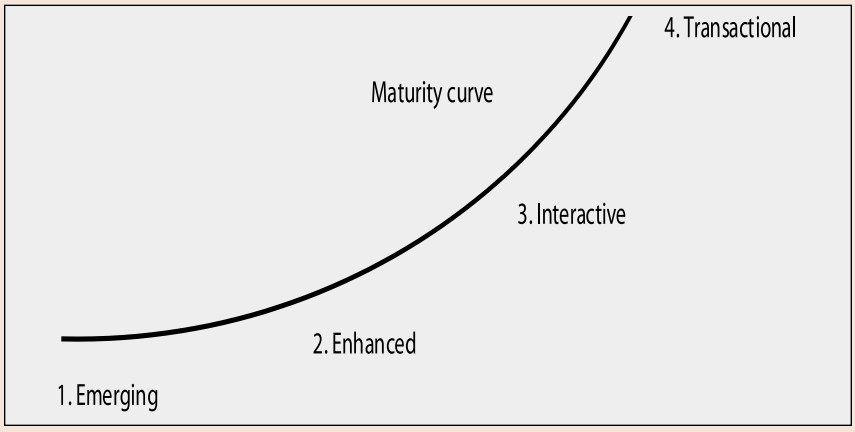
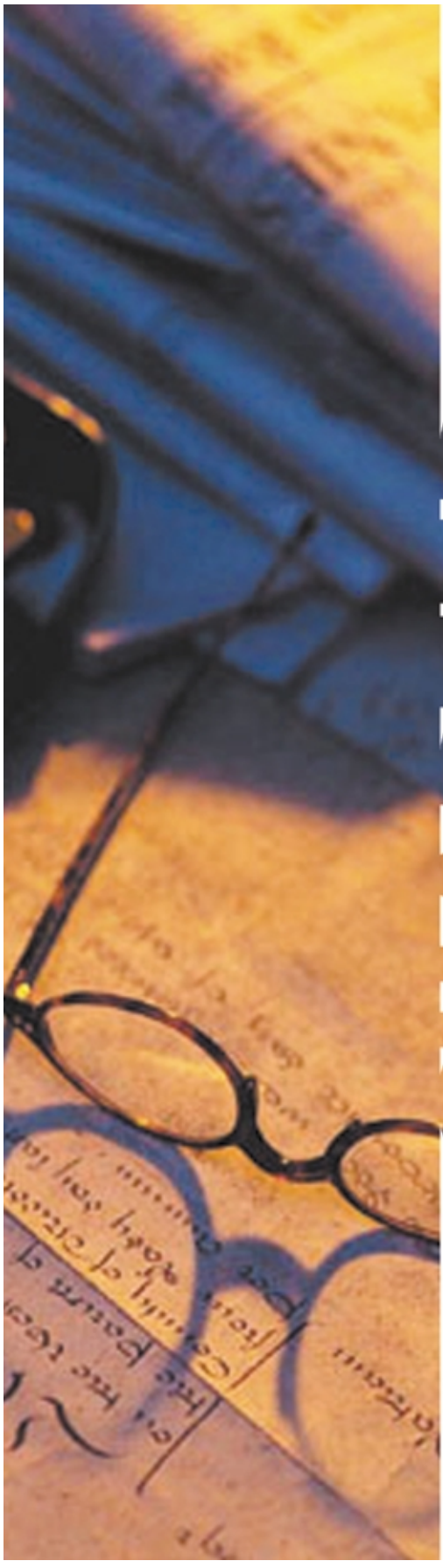


Table 3: E-government Maturity Model of OECD

Maturity	Objects	Citizen/government communication	Communication methods
Information	Government information	One-way	Website (portal)
Consultation	Government service	Two-way	E-civil service, CRM
Active participation	Public policy	Partnership	Cyber forum, E-voting

Source: OECD(2001), Engaging Citizens in Policy-Making: Information, Consultation and Public Participation, PUMA Policy Brief, No.10, July.



CHAPTER 3

E-government Action Plan

3.1. Pre-implementation

Implementation of E-government largely consists of 3 phases: design, development and deployment. At the design stage, political leaders drive the E-government initiative, and there should be a few champions carrying out activities to increase social awareness. Secondly, the social governance including the establishment of a core agency to implement E-government needs to be built up. Thirdly, the core agency analyzes environments. Fourthly, national and international cases need to be studied for benchmarking.

3.2. Implementation

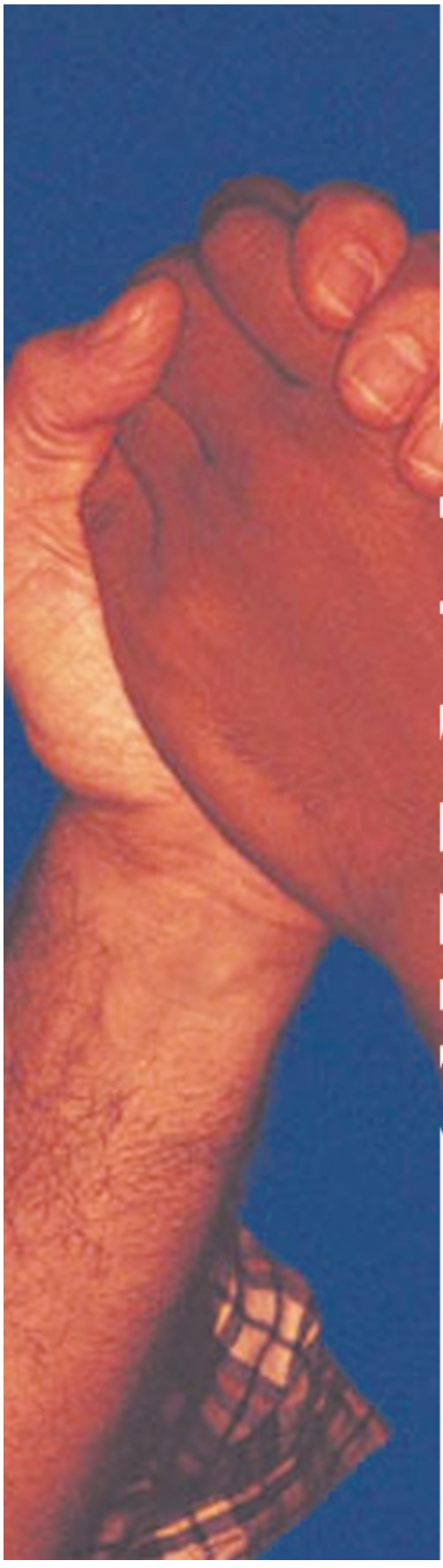
In the implementation phase, the vision and strategic goals of E-government need to be set based on the review of the environment and constraints. Secondly, the roadmap and milestones corresponding to the strategic goals need to be set up. Thirdly, strategic priorities should be decided by reviewing the degree of government innovation, aspects of demand and supply, bottom-up and top-down approach, sourcing, and the result of the stakeholder analysis. Fourthly As-is analysis and To-be model for the present resources, which are key success factors, should be proposed. Finally, processes like BPR and ISP and system development will start.

3.3. Post-implementation

At the post-implementation phase, 3 tasks should be done; firstly, the performance of the project should be evaluated by monitoring whether it has been implemented according to the plan without risk. Secondly the operation and maintenance of the project should be considered along with management of information resources. Thirdly, the promotion of E-government services to people and feedback for the project should be carried out to make the services fully utilized and to develop the second stage of E-government, respectively.

Table 4: Phases of E-government Action Plan

Phases	Steps	Activities
Pre-implementation	1. Leadership & awareness	1. Mission and mandates, 2. Political leadership, 3. Social awareness: policy network
	2. Institution building	1. Core institution building, 2. Partnership: committee, PPP
	3. Analyze environment	1. Natural factors: Geography 2. Human factors: literacy,digital divide 3. Political and administrative culture
	4. Benchmarking	1. Past cases 2. Foreign countries
Implementation	5. Vision statement	1. Vision statement 2. Strategic goals
	6. Develop roadmap	1. Hierarchical structure 2. Prioritization of projects 3. Description of unit project
	7. Build strategy	1. Reform: automation vs. reengineering 2. Empowerment: top-down vs. bottom-up 3. Customer definition
	8. Manage critical factors	1. Human resources 2.Financial resources 3. Technological resources 4. Laws and regulations 5. Stakeholder analysis 6. Outsourcing management
	9. System development	1. BPR 2. ISP 3. System development
Post-implementation	10. Evaluation	1. Project monitoring 2. Evaluation
	11. Operation	1. Operation and maintenance 2. Information resources management
	12. Feedback	1. Public relations for system utilization 2. Feedback



PART II. PRE-IMPLEMENTATION

CHAPTER 4

Leadership and Awareness

4.1. Mission and Mandates

E-government is often considered by political leaders or parties as a way of promoting national development and people's benefits, making it a desirable goal to achieve. By putting great interest in major political agenda such as economic development, national competitiveness, democracy, quality of life, and governmental innovation, the president and the national assembly need to value clear mission and mandates of E-government. Since 1960s, while steering economic development, presidents of Republic of Korea have been deeply involved in national information society policy, recognizing it as a strategic method for economic growth.

4.2. Political Leadership

The most crucial success factor of the E-government project is the solid vision and continuous concern of political leaders. A lot of E-government projects tend to fail because the political leaders do not have precise understanding on E-government, or maintain continued concern from the beginning to the end of the project. Political leadership is also interrelated to his/her term of office. Therefore, it is crucial to set relevant laws and regulations to institutionalize his/her strong will and interest

early in his/her term so that resources appropriate for the project can be allocated in a proper and timely way during implementation, preventing outside influences. Presidential efforts to make the national assembly, media and people understand the intangible and long-term advantages of E-government are important.

Many forms of committees can be organized or utilized to help a political leader make a final decision by providing coordination among a variety of opinions and interests. Yet, the terms of reference for the committees need to be carefully defined; how the chair or members will be organized, whether they simply provide advices or are bestowed with power to review and coordinate will change the result of their performance.

Box 1: Involvement of Korean Presidents in E-government

President Doo-hwan Chun (1981-1987) appointed the Chief of Staff to the President as the Chairman of Coordination Committee for the 1st phase of the National Basic Information System (NBIS) project started in 1987. It was institutionally exceptional to designate the President's staff as the committee chairman. President Dae-jung Kim (1998-2002), who had deep understanding as well as great interest in information society agenda, initiated the first phase of the E-government project (2001 -2002). President Moo-hyun Roh (2003-2007), who led the 2nd phase of the E-government project (2003-2007), had also expertise in computers enough to manage his server and do programming by himself during his political activities.

Box 2: Easy-One System

The Office of the President initiated the Easy-One (E-chiwon) System as one of the 31st roadmap projects in 2005. This project has been directly led by President Roh himself. He believes that the processes of policy making and implementing should be managed with transparency and accountability, and the outcomes of such processes need to be preserved. Having good knowledge and skills in ICT, he has also been utilizing ICT for his political activities quite a lot, compared with other politicians.

E-chiwon means "electronic source of knowledge" in Korean. It has been initiated by the presidential will that all records generated through communications and decisions made among the president and his staffs should be kept life long. Easy-One is the system dealing with the whole process of formulation (who proposes what kind of opinions), implementation (how the developed policy is implemented), and outcomes of a policy.

There are pros and cons regarding the development of the system for top level decision-making. Supporters believe that it can bring transparency and accountability to

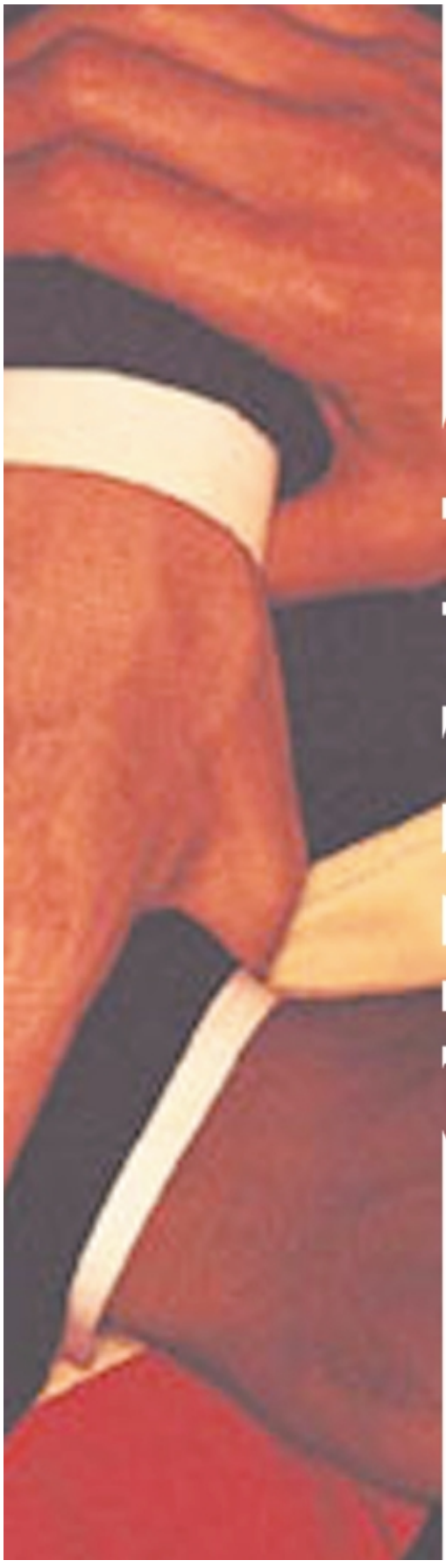
the policy process, and this fact becomes much more crucial when the policy to be made and implemented is important. Others think that the top level decision-making processes should be carefully managed according to the confidentiality of the top decision-making group.

In spite of such debates ongoing, the president himself led the project, and even asked for the modification and improvement of the system to reduce difficulties encountered while using the system. His secretaries also had to use it as he insisted receiving reports and giving directions for all decision-making through the system. Under these circumstances, the Easy-One system could be stabilized early and its patent was applied to the Republic of Korea Intellectual Property Office in February, 2006. A major variable for the survival of the system, exposed to the highly political environment, is the will and preference of the next president whether to continue to use the system.

4.3. Social Awareness

Making E-government a social agenda requires the leadership from not only a political leader but also the policy initiator group who can draw social interest with their expertise and anticipation for the future. The policy initiator group includes university professors, media and civil societies who show high interest in E-government, and can be effectively utilized to improve social awareness by establishing a policy network.

The widespread dissemination of the Internet in Republic of Korea is a result of, not only the government promotion policy since 1980s, but also the social campaigns led by such policy networks (Song, 2004:91). One major press in 1994 began to trumpet the social campaign, "Let's lead the world in information society, although we were late in industrialization." That caused a strong social response. A lot of universities and NGOs led the social campaigns to improve national awareness by holding diverse competitions to promote the informatization mindset of people. A strong demand for informatization from both economic and social side can leverage the expansion of awareness for E-government.



CHAPTER 5

Institution Building

5.1. Core Institution Building

5.1.1. Ministry In-charge

E-government can be implemented only when the presidential will and social consensus become tangible by setting up key agencies for the project. Lead agency adopted by countries can be largely classified into 4 models; the president (prime minister), the ministry of budgeting and planning department, the ministry of science, information and telecommunication, and ministry of public services. The models can be also differentiated according to the political and administrative system, economic situation, and historical background of each country. Along with such differences, several common features can also be found in the frameworks for E-government adopted by countries.

Firstly, the administrative structure is not fixed but it continuously changes. In particular, with the E-government evolving into the level of seamless integration, it tends to become the agenda of higher agencies.

Secondly, the E-government project tend to have strong linkage with government innovation, as the cases are shown by the Office of Management and Budget (OMB) in USA, the E-Government Unit (or E-envoy) of

the Cabinet Office in UK, and the Special Committee for E-government in Republic of Korea.

Thirdly, the performance management of the E-government project tends to be reinforced, as the amount of national budgetary resources input to the project continues to expand. In many cases, performance evaluation is conducted by the ministry of budget planning or finance.

Table 5: Classification for Organizations of Major Countries In-charge of E-government

Categories		Countries
Agencies directly under the president (prime minister)		USA, UK
Central governments	Finance and budgeting	Canada, Sweden
	Science and ICT	Australia, Singapore, Republic of Korea
	General administration and public services	Japan, France, Germany

Box 3: Agencies In-charge of E-government

In Republic of Korea, the Ministry of Post and Telecommunications (MPT) had led the development and implementation of telecommunication policies by 1980. After all telecommunication functions being separated from the MPT to Republic of Korea Telecommunication Authority (KT) in 1981, and creating the subsidiary National Computerization Agency (NCA) to implement the National Basic Information System (1987-1996) in 1986, the MPT became a leading ministry for national informatization. The MPT was renamed the Ministry of Information and Communication (MIC) in 1994, and became the key ministry supervising E-government, starting to manage the informatization promotion fund and establish 5-year Master Plan in 1995 based on the Informatization Promotion Framework Act.

With such changes, the MIC has been gaining expertise on E-government through supporting the project with technologies, financial resources and administration, although agenda setting for E-government have mostly been done by the committees directly under the president. In 2003, President Roh designated the MOGAHA as the executor of E-government instead of the MIC, in order to implement the project as part of government innovation. Accordingly, the E-government project is managed by two entities; the planning part related to governmental innovation is implemented by the MOGAHA and technological part by the MIC.

5.1.2. Technical Support Agency

The E-government project requires technical expertise, being a process of linking governmental tasks with technologies. This creates a need for a public agency supporting the project with a variety of technical activities such as outsourcing and purchasing equipments.

In general, the management system of the public sector is operated following government-wide human resources management such as payment and promotion. Hierarchical and inflexible management system, characterized as low salary and difficult promotion, tend to create an environment where technical professionals with special expertise are reluctant to join in the public service. When hired, they may deskill themselves to fit in the inflexible public sector for survival. Therefore, public agency should be set up to utilize technical experts.

Box 4: Institution Building of National Computerization Agency

Korean government set up the National Computerization Agency (NCA, http://www.nca.or.kr) in 1986 as a non-departmental public body to implement the first phase of the National Basic Information System Plan (1997-1992).

The NCA has been successfully playing a role in designing, implementing, auditing and evaluating the national informatization project, gaining a plenty of experiences and know-how on national informatization and E-government. Currently it has about 250 experts with a variety of academic and professional specializations. It should be pointed out that the NCA, although being a subsidiary of the MIC, is fully supporting the activities of other ministries to improve governance as a coordinator for national informatization, leaving the sectionalism aside.

In addition, the core functions of the NCA have been broken down and specialized corresponding to the evolution of ICTs and services. One of its functions is information security and has been transferred to the agency called Republic of Korea Information Security Agency (KISA) in 1996. The Republic of Korea Agency for Digital Opportunity and Promotion (KADO) was established in 2002 to promote the informatization and to bridge the digital divide, and the National Internet Development Agency of Republic of Korea (NIDA) was separated from the NCA for management of Internet address resources in 2004.

Establishing new governmental subsidiaries may increase managerial burdens on the government, yet should be considered as a trend corresponding to increase in the amount of work and specialization of technologies, resulted from the advancement of information society.

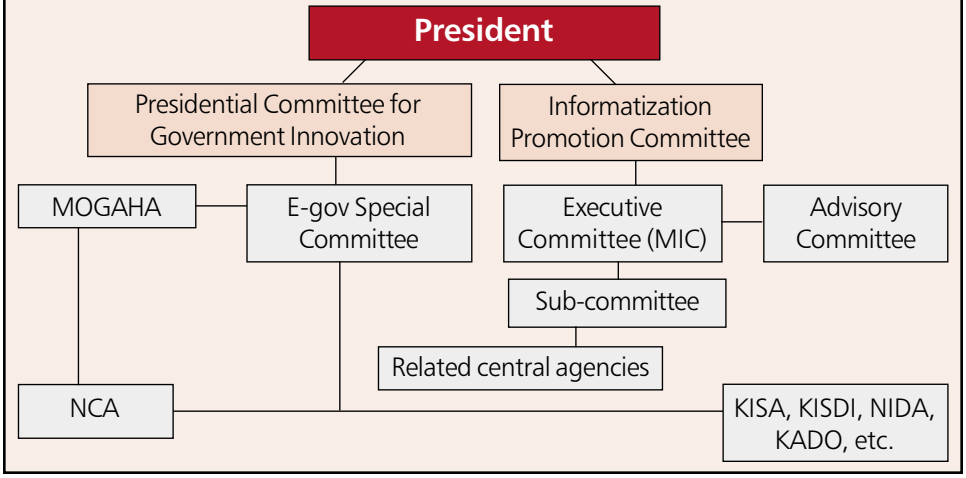
5.2. Presidential Committee: Partnership Building

Committees providing advices and coordination for governance are crucial, along with core implementing agencies; they are considered as institutional tools to openly input a variety of professional knowledge and opinions to the project. In Republic of Korea, the Special Committee for E-government was established, under the Committee for Governmental Innovation (chair: minister-level civilian) directly led by the president, to coordinate and review the roadmap. The special committee for E-government is composed of university professors, presidents of IT related public agencies, senior managers of private companies, along with vice minister of MOGAHA, MIC, and the Ministry of Planning and Budget (MPB); as main actors of the committee, they set up the roadmap, review the implementation of the project, and carry out coordination among ministries, if necessary. The progress status is also directly reported to the president, improving pan-ministerial understanding on the project. Therefore, in Republic of Korea, E-government has been considered as the agenda for the president since 1987.

Table 6: Top Decision-makers for E-government in Republic of Korea

Project	Year	Agenda Setter	Main Implementer	Lead Agency
The first phase of National Basic Computer Network	1987-1992	President	Coordination Committee for the National Computer Network (chair: Chief Secretary to the President)	MPT
The 2nd phase of National Basic Computer Network	1993-2000	Prime Minister	Republic of Korea Informatization Promotion Committee (chair: Prime Minister)	MIC
The 1st phase of E-government	2001-2002	President	Special Committee for E-government (chair: expert from private sector)	MIC
The 2nd phase of E-government	2003-	President	Special Committee for E-government (chair: expert from private sector)	MOGAHA

Figure 7: Organizational Structure for E-government Roadmap since 2001



CHAPTER 6

Environmental Analysis

6.1. Natural Conditions

Conditions such as the natural environment and the structure of population should be reviewed. From a viewpoint of communication, a large and sparsely populated country shows high social urgency for E-government. This is why countries showing relatively low population density such as USA, Canada and Sweden are leaders in E-government. However, small and populated countries such as UK, Singapore, Netherlands, and Republic of Korea are also globally leading E-government.

In Republic of Korea, population concentration in the capital city, caused by rapid industrialization, largely has contributed to the establishment of high-speed networks. As large population moved to Seoul, a lot of apartments and condominiums were built up to accommodate them during 1990s, making it easy to distribute high-speed networks. The MIC also set up the Master Plan, institutionalizing the private contractors to install state of art networks and provided incentives. In addition, the private contracts competitively provided a variety of options for their buildings to secure good customers.

The characteristics of people in terms of economic, social and cultural factors are also

important. Korean economy was transformed from the government-led to the market-led system, after experiencing and being recovered with financial support from the International Money Fund (IMF) from Asian economic crisis in 1997. Corresponding to such change, private companies started to invest on informatization to deliver faster and better services; this was evaluated as a good business strategy which transformed a crisis into a chance.

6.2. E-Readiness

Firstly, people's literacy and access to the system should be considered. Access to information system requires general literacy of citizens as well as computing skills of users. Koreans are very interested in education, which has been the most important factor for social mobility historically. In particular, the Hangul, composed of 24 alphabets similar to those of English, is easy to learn and can be effectively adapted to computer keyboard. Accordingly, Republic of Korea was able to achieve a high literacy rate and create an environment for easy access to the system.

Secondly, all levels of schools from elementary ones to universities started providing students with Internet-based learning services since 1998. In addition, there are more than 30,000 net cafes (PC rooms) across the country, providing the Internet games and chatting services at very cheap prices. During the Seoul World Cup matches in June 2002, the Internet was a very important channel through which many soccer fanatics exchanged information on games, players and rules. This in turn raised public awareness about soccer and encouraged the Internet to become an essential part of every day life for a majority of Koreans.

Thirdly, the major market players including Samsung Electronics, LG and SK contributed greatly to E-readiness in Republic of Korea by developing technologies and creating global market to commercialize them.

6.3. Administrative Culture

The administrative culture has a great impact on understanding for the need of E-government and acceptance for the system. The government dominated by closed and sectionalized culture finds it difficult to make ministries share information. Delivering public services online is also challenging because the public officers tend to prefer face-to-face processing based on paper documents. E-government cannot be fully utilized if the automation of the existing process is more valued than the adoption of an effective solution (e.g. e-transaction) through BPR, or if the procedures or demand of an organization are more emphasized than the demand and satisfaction of citizens. The administrative culture passive to online environment and resistant to information sharing can be overcome with a strong political leadership and systematic trainings.

CHAPTER 7

Benchmarking

7.1. Approach to Benchmarking

Benchmarking is an activity to study the best practices of other countries or ministries and utilize them as learning opportunities for the development of an organization. Currently, most of countries, exposed to common mega-trends, makes it easier to benchmark such cases. However, their social, cultural and religious features including the political, administrative and market system are quite distinctive. Bearing in mind an old saying that an orange tree in the south becomes a trifoliate orange tree, if planted in the north, benchmarking should be carefully done; a case relevant to each country's unique situation should be chosen and customized.

7.2. Sources

7.2.1. Reviewing Past Experiences

The historical analysis on past experiences can help the successful implementation of the E-government project. Same or similar problems occurred repeatedly in the past can be resolved by same or similar solutions. Also, it enables the project leaders to predict the outcomes of multiple implementation processes, the activities of stakeholders, and required resources and restraints. Although social and institutional variables can be predicted by this analysis, the social framework may become a misfit for information technologies which are rapidly advancing.

7.2.2. Cross-sectional Analysis

Conducting cross-sectional analysis on foreign cases makes it easy to predict consequences of implementation, political forces, resources needed for execution. However, analysis and pre-performance evaluation should be carried out to assess whether the same outcome can be achieved by adopting E-government cases implemented in different social context. E-governments implemented in different countries have different features regionally. Therefore, in benchmarking foreign cases, such differences should be recognized.

Table 7: Countries for Benchmarking

Group	Countries
Anglo-American	United States, United Kingdom, Canada, Australia
Continental	France, Germany, Japan, Austria, Italy
Nordic	Sweden, Norway, Finland, Denmark
Asian	Republic of Korea, Singapore, China, India

7.3. Methods of Benchmarking

Benchmarking is not limited only to success cases. It is more important to gain a lesson by thoroughly studying failure cases. In addition, the context, along with facts, should be carefully looked at in order to overcome the errors in benchmarking. A lot of cases prove that the obstacles for successful E-government are to be found at a variety of levels; the condition, circumstance and culture of the times at the macro level, laws and leaderships at the meso level and project management at the micro level. Therefore, it is crucial to study failure factors examined in multiple levels.

Box 5: Benchmarking Strategies of Republic of Korea

Republic of Korea has benchmarked the U.S.A. and Japan for economic development since 1960s. However, it came to realize that the situation in Republic of Korea was quite different from them after implementing the national informatization project in 1990s.

Unlike the U.S.A., Republic of Korea has a small land where a large population is cramped. It adopts the centralized government led by the president as a political system, while the U.S.A has the federal government led by the legislative branch. Japan shares some common features with Republic of Korea in terms of natural environment. Yet, in 1990s, Japan alone experienced 'lost 10 years' when the prime minister of the parliamentary government failed to show the leadership qualities and was frequently replaced, resulting in political instability. At that time, Republic of Korea was able to become a global IT leader owing to vast investment on broadband networks led by the strong will of the president. In addition, Republic of Korea started to benchmark U.K. and France, which show similarity in the size of population and economy. As a result, international organizations like ITU (April, 2003), OECD (November, 2001), and major media including New York Times(May, 2003), Fortune (September, 2004), along with global celebrities including Bill Gates (November, 2001), Alvin Toffler (June, 2001) announced that Republic of Korea can no longer have a verified model for benchmarking successful cases.

CHAPTER 8

Part III. IMPLEMENTATION

Vision and Goals

8.1. Vision Statement

E-government vision should be clearly stated so that specific objectives and strategies which can show the future in advance can be set up; it is a desirable blueprint which is feasible as well as imaginative enough to allow people to foresee a beautiful future, and a driving force which makes all members endeavor to accomplish the goals. The vision, objectives and strategies should also reflect the social need and national priorities set by a political leader within the political and economic context of a country.

In many countries, the E-government vision includes enhancement of national competitiveness, facilitation of market economy, promotion of participatory democracy, and improvement of quality of citizen' lives by reducing governmental failures, and mitigating the limitation of the representative democracy. Such vision can be realized by accomplishing specific objectives such as the efficiency of public administration, responsiveness of civil services, transparency in policy processes, and people's participation. The vision and objectives of E-government should be linked with specific strategies and methods related to priority setting and resource distribution for the project.

Korean government has been implementing the project with the vision and objectives that can be realized. The visions like 'leapfrog to the global leader in 21C' and 'realization of world-best E-government' are viewed as an appropriate level to drive citizen's interest on the project, considering the size of economy, ICT infrastructure, and the political leader's interest. The objectives are also accomplishable and tangible. For implementation strategies and methods, the bottom-up and demand-side approach, which enhance the linkage with governmental innovation, are adopted instead of the top-down and supply-side approach.

Table 8: The Visions, Objectives and Strategies of Korean E-government

Project	Vision	Objective	Strategy
The 1st phase of E-government	Leapfrog to the global leading country in 21C	- Projective and transparent government - Providing public services for 24 hours - Enabling business environment	- Top down - Demand-side
The 2nd phase of E-government	Realization of the world best E-government	- Innovation in service delivery - Improving autonomy and transparency - Realizing sovereignty of people	- Linking reform - Demand-side

8.2. Strategic Goals

8.2.1. Government Failures

E-government pursues a variety of visions and objectives, utilizing ICT as an enabler to overcome or mitigate government failures in 1970s. In general, they include extravagant expenditure caused by the expansion of the government, poor quality of civil services, secrecy and lack of transparency, ministerial sectionalism, and lack of accountability of public officers. Therefore, E-government aims to achieve competitive market, democratic government, and common values so that it can transform the failed government into the competitive one.

8.2.2. Competitive Market Values: Efficiency and Effectiveness

E-government pursues market values such as efficiency and effectiveness in administration. Run by tax money from people, the government continuously seeks to achieve efficiency and effectiveness, which means getting a great result by inputting little financial and human resources. E-government contributes to reducing the use of financial and human resources and improving a customer's satisfaction in the delivery

of public services. Yet, in many cases, E-government fails to reduce the number of public officers within a short period. Particularly, in developing countries where job opportunities for people are limitedly found in the public sector, the E-government objective to reduce the size of the government may cause strong resistance from public officers, hindering further implementation of E-government. Therefore, setting goals like increase in a customer's satisfaction by improving the quality of civil services as more important objectives can be helpful to increase the acceptance for the project.

Box 6: E-procurement System

The Presidential E-Government Committee decided to develop an Internet-based Government e-Procurement System (GePS) (www.g2b.go.kr) as one of eleven projects in 2002. In the beginning, there arose serious concerns about the security of the Internet-based transactions on a national level and resistance of stakeholders related. At that time, this kind of entire Internet-based procurement transactions, which were vulnerable to external cyber attacks, was the first attempt over the world. In addition, public procurement has been traditionally one of easily corruptible areas, as indicated by the Transparency International.

Through the establishment of a Single Window government procurement system, the entire process from registering as contractor, to bidding on public projects and goods and services, to signing contract agreement, to receiving payment for services, takes place via the Internet instead of electronic data interchange (EDI). The procurement process is open to all tenderers and simplifies government procurement through an Internet-based solution. The GePS solution makes government procurement processes transparent and accountable, and expands the E-commerce platform to the national market through expanding competition. As a result, government agency can procure at the cheapest price in the national market instead of in local ones.

The Government Procurement Office won the first United Nations Public Service Award in June 2003 for the GePS's excellence and expected effects in enhancing efficiency and transparency of government administration. As of now, GePS is well under operation, without any serious drawback.

8.2.3. Democratic Government Values: Transparency and Accountability

Secondly, E-government contributes to achieve transparency and responsibility through information dissemination. Transparency plays a crucial role in preventing the corruption of the public sector, securing people's right to know and access to information, improving the quality of democratic policy decision-making processes, justifying the distribution of social resources. The International Monetary Fund (IMF) has diagnosed the cause of currency crisis in Mexico and Asian countries during 1990s as distributing improper economic information, hiding weaknesses of the financial system and losing the market trust due to

the lack of transparency in policy making processes (IMF, 2001). According to the research of the Transparency International (TI), the local governments along with organizations dealing with procurement, taxation and tariff and the police are considered to be most likely the corrupt (Pope, 2000:61, 108).

Corruption tends to occur in the place where huge power is given for decision, services are provided by a monopoly, and the level of responsibility is low (Corruption = Monopoly + Discretion – Accountability) (Klitgaard, 1988). E-government can reduce the possibility of corruption by restricting the arbitrary business processing of public officers through disclosing and processing information according to the standard of the business process, and by eliminating a chance to meet the citizen face-to-face.

Box 7: Seoul's OPEN system

Gun Goh, Mayor of the Seoul Metropolitan City of Republic of Korea, introduced the OPEN (Online Procedures Enhancement for Civil Applications, www.seoul.go.kr) in April 1999, as a way to reduce corruption in routine transactions between civil servants and citizens.

Instead of making an in-person visit or phone calls, citizens can use a personal computer to access an Internet-based application designed to make it easy to track 54 kinds of applications for services, permits, and information offered by each department in the Seoul Metropolitan government.

If a customer has applied for a building permit, he or she can check from a personal computer screen whether the application is properly registered, who is handling the case at any given time, how it is being reviewed, when the final approval can be made. Real-time information on the present status of the application is readily available to him through the Internet. The OPEN system is a valuable anti-corruption program by eliminating the need for personal contact with officials and for paying 'speed money.' It has contributed to reducing corruption by creating more transparent ways of doing business with the Seoul Metropolitan Government.

8.2.4. Civil Society Value: Participation

Thirdly, E-government can facilitate participation through electronic media, allowing representative democratic system to overcome its limitation and to secure procedural rationality in policy processes. By doing so, it plays an important role in securing social trust, without which a huge amount of transaction costs prevails in society. Considering the fact that social capitals like trust play an essential role in democracy and economic development, expanding participation in policy processes using ICT can contribute to the establishment of democratic governance.

Box 8: National Education Information System and Privacy Issue

The National Education Information System (NEIS) is a project to make more than 10,000 schools across the country share 27 kinds of information including grades, health of students as well as school administration through 16 information sub-hubs linked to each school. Traditionally, competition to enter a prestigious university is severe because people think it as the most important condition for upward mobility. Therefore, universities have to pay a huge amount of transaction costs to process student information including high school grades during examination season. The NEIS was implemented as one of the first phase of E-government project to solve this problem by connecting universities and high schools with the Internet.

However, some NGOs and Korean Teachers & Educational Worker's Union opposed to this project, pointing out that the collection of personal information like school grades may result in its exposure and misuse. The NEIS is a sensitive issue where the efficiency and transparency of E-government collides with personal privacy. As a result, in 2003, the government led by President Roh, negotiating with NGOs, decided to allow national sharing of 24 kinds of information only, and 3 sensitive kinds of information including grades and health will be co-managed by 15 schools bounded as one unit. With this modification, the NEIS was able to become operational in March, 2006.

Bounding 15 schools as one unit results in the creation of hundreds of sub-hubs, requiring more budgetary resources for servers, spaces and people. As the budget was not enough for the system, LINUX, which is a open software, was adopted.

The problem of the NEIS was initiated by concerns for projection of personal information. However, in the background, it can be viewed as a problem of lack of participation by the school teachers, who are the main users for the system. Therefore, a lesson can be gained that users' participation in system development to reflect their demands is crucial for the successful utilization of the system.

CHAPTER 9

Roadmap and Milestones

9.1. Hierarchical Structure

The visions and objectives of E-government can be shaped more concretely by establishing agenda or portfolio as intermediate goals providing information on roads, rest areas, milestones that indicate the direction to the destination (visions and objectives). In this level, the front office (G2C), the back office (G2G) and infrastructure building are generally used.

The government of UK classified the types of the E-government project into 4 categories including G2C, G2C and the management of changes while benchmarking leading countries (UK CITU, 2000; 2001). The government of USA uses 4 portfolios; G2C, G2B, G2G, internal efficiency and effectiveness(IEE) to classify 25 projects that have great potential for citizens, improve ministerial efficiency, require cooperation among ministries, and can show tangible achievements within 18~24 months (US OMB, 2002).

The roadmap for the 2nd phase of E-government in Republic of Korea, which started in 2003, is composed of 4 areas and 10 agenda within which 31 unit projects are included. The number of unit projects per areas and agenda are imbalanced as there

Table 9: Value/fact Linkages of the E-government Project

Value (abstract)			Fact (concrete)
Vision	goals	agenda (portfolio)	unit projects

are still a lot more services to be developed for the front office service and the back office management. Innovating information resource management and restructuring legal framework are crucial foundation for E-government into which a lot of resources are put, although the number of projects is small. Therefore, more attention should be paid to the amount of financial and human resources invested in the projects than the number of the projects during *the* implementation of the projects.

Table 10: The Roadmap Structure for the Second Phase of E-government in Republic of Korea

Field	Agenda	Project
Innovation of Government business practices	1. Establishment of process online 2. Expanded sharing of administrative information 3. Redesign of procedures to be service-oriented	9 1 1
Diffusion of front office service	4. Advancement of civil services 5. Advancement of business services 6. Expanded online participation by citizens	8 5 1
Innovation of Information resource management	7. Integration and standardization of information resources 8. Enhancement of information security system 9. Specialization of human resources and organizations	3 1 1
Law	10. E-government legal reform	1
	Sum	31

9.2. Prioritization of Projects

The types of governmental work can be classified by 2x2 matrix from a standpoint of the linkage to citizens (back office management vs. front office service) and interagency linkage. Pattern I is informatization of internal business, appearing at the early stage, and can be easily initiated, while pattern IV, considered as the most difficult level, is cross-agency e-service to citizen and requires coordination and cooperation among agencies. Pattern II and III are intermediate stages; the former is agency-specific e-service to citizen and the latter is cross-agency business. In general, informatization can be completed by going through I - II - III - IV stage. At the first stage, the focus is given to informatization of internal business, without which civil services cannot be provided, or can offer only simple information through the website or Q&A service. At the last stage, pattern IV, cross-agency e-service becomes available.

In many countries, ICT has been utilized to increase efficiency of internal administration at the early stage, than to improve the quality of civil services at the last stage. In the beginning of the E-government, ICT applications predominantly played a role in the enhancement of the internal efficiency and effectiveness of the executive functions of public administration especially in the sphere of policy implementation, while only later on the improvement of the quality of public services to the citizens, as customers, clients, citizens, and subjects; to businesses and social organizations; and to other branches of the public service itself came into focus (Snellen, 2005:399). Therefore, the characteristics of work and the informatization level of the government (ministries) should be reviewed to select an appropriate unit project.

Table 11: Types and Evolution of the Information System

		Linkages to Citizens	
		Back office management	Front office service
Inter-agency linkage	None	I. Internal business	II. Agency-specific E-service to citizen
	Much	III. Cross-agency business	IV. Cross-agency E-service to citizen

9.3. Contents of Unit Project

The contents of the selected unit project needs to be organized in an order of As-is analysis (current status and problems), major issues and To-be model, detailed implementation plan, and expected effects. The detailed implementation plan includes objectives, directions and strategies, implementation framework, the service contents and improvements, time schedule, annual budget planning (tentative), progress review and performance evaluation. In addition, the project management plan should be able to suggest the plan for progress review or performance evaluation in advance. Yet, it is difficult in reality if the manager doesn't have a mindset for such plans, or evaluation tools have not been developed.

Table 12: Major Contents for a Sub-project

1.	As-is analysis
2.	Major issues and To-be model
3.	Detailed implementation plan
3.1.	Objectives
3.2.	Directions and strategies
3.3.	Implementation framework: main ministry, department and person in charge
3.4.	Time schedule
3.5.	Annual budget planning (tentative)
3.6.	Progress review and performance evaluation
4.	Expected effects
4.1.	Quantitative effects
4.2.	Qualitative effects

CHAPTER 10

Strategy Setup

10.1. Government Innovation: Automation vs. Process Reengineering

E-government was introduced during 1980s with an intention to use advanced ICTs for the innovation of governmental business processes. In this sense, the patterns of organizational change which are so commonly associated with the information age are remarkably consistent with the patterns associated with the current forms of managerialism in public administration (Bellamy and Taylor, 1998:37).

As shown in Figure 8, E-government and government innovation share common outcomes including improvement in organizational structure and culture, process, and the quality of service, although the degrees of achievements are a bit different. The expected effect of government innovation is high in reforming organizational structure, but low in improving the quality of service. On the other hand, the expected effect of E-government is high in delivering user-friendly service and service availability, but low in reforming organizational structure. Both expect the similar level of effects for organizational culture and process.

Figure 8: Linkage between Government Innovation and E-government

Factors		Expected Effects
Organizational structure	Hierarchy	Government innovation
	General rules	
Organizational culture	Incentive/motivation	
	Transparency	
Process	Streamlining	
	Paperwork reduction	
Service quality	User-friendly service	E-government
	Service availability	

In most cases, informatization starts from simple automation of existing work process in early stage, and turns into process innovation later. The fundamental innovation of the government can be highly effective, but difficult to adopt once the bureaucrats resist changes. The cumulative model suggests an innovative process slightly better than existing one, making bureaucrats accept it easily, but can gain only limited achievements. As E-government is a tradeoff for government innovation, their association should be set in the middle range or meso-level, where both the ideal of a political leader and the concern of bureaucrats are well balanced.

10.2. Empowerment: Top-down vs. bottom up

The second dimension is bottom-up vs. top-down consideration. Bottom-up approach starts from the micro level and accumulate building blocks to the overall E-government strategy with the worm's eye-view, while top-down one starts from the macro level and creates an overall plan, having it implemented at local level little by little with the bird's eye-view. Usually in the beginning stage of E-government, pioneering agency tends to start with bottom-up approach, while in the more matured stage, government conscious of seamless integration attempts to create government-wide comprehensive plan with top-down approach.

Bottom-up approach fits for the administration with the culture of pluralism and decentralization. This approach also requires ministries to be linked in order to realize the seamless integration of E-government. In a plural and decentralized environment, it is difficult to forcefully spread out the standards of a certain ministry. Therefore, the intermediate standards which everyone can accept to some extent need to be suggested. The typical case is the reference model made by OMB in USA. The reference model is less effective for government-wide integration, but relatively well accepted by ministries thanks to the low sunk cost for legacy systems. It is also able to flexibly cope with the market changes.

Top-down approach fits for the administration with the centralized culture. In centralized environment, a political leader plays a very important role in adopting the government-wide standard. The government-wide model can integrate ministries very effectively, but may bring strong resistance against the system. Another problem is that the whole system may become a sunk cost when the market circumstance and technological paradigm changes rapidly.

It is worthwhile to look at 3 approaches related to E-government strategies in conjunction with Korea's historical experiences. The success of a strategy depends on national conditions and restrictions. In a standpoint of process innovation, it didn't get much attention at first; a focus was given to the automation of existing process. However, as time goes by, the process innovation is getting more attention. Most of countries have been experiencing a similar change. Secondly, many countries adopt the top-down approach at the beginning, turn into the bottom-up approach in the middle of implementation, and return to the top-down approach as the need for ministerial integration and connection gets bigger.

Korean Government successfully initiated five-year Economic Development Master Plans seven times with the strong top-down approach between 1961 and 1994. Accordingly, the first phase of the National Basic Information System, which started in 1987 aiming at informatizing the public administration, also adopted the strong top-down approach. Yet, trends like democracy and market liberalization during 1990s made such Master Plans obsolete, and as a result, the government officially abandoned master plans, which stand for planned economy, in 1994. Because of such changes, the implementation of the second phase of the National Basic Information System was done in a decentralized way by each ministry. In addition, the Informatization Promotion Framework Law, enacted in 1995, includes strategies to promote the informatization project ministry by ministry. Yet, the first and second phase of E-government, starting in 2001, adopted the top-down approach in order to enhance the integration and linkage.

Figure 9: Changes in Approaches to E-government in Republic of Korea

	Top-Down Phase III (2001-present) E-government projects (G2C, procurement, tax, personnel, Four social insurances, education) Process innovation
Phase I(1987-1992) National Basic Databases (resident, real estate, vehicle, research and education, etc) Automation	
Phase II (1993-2000) National Basic Information System (customs, patent, registry, export & import cargo, school LAN & Internet access)	
	Bottom-Up

10.3. Customer definition: Supply-side vs. demand-side

The success of E-government depends on the degree of convenience the users get from the developed system. The acceptability and utilization of the system is affected by the expectation of the users. However, the high expectancy in the early stage makes them less tolerable to small errors or defects of the system. In addition, unless the users feel any need for the system, they will not use it, no matter how good the developed system is. If there is potential need for service, it can be recognized and realized to use the system.

E-government should consider both the convenience of government officers and the need of the citizens. Yet, in developing countries, the chances are high that it is developed for the need and convenience of governmental bureaucracy, rather than for the need and satisfaction of the citizen, because developing countries tend to have great need for government-driven economic development, and their civil society shows weak control over government. E-government can be implemented to improve national competitiveness or the quality of civil services. Yet, it also can be pursued as a way to boast the achievements of politicians or bureaucrats, or to control the citizens with accumulated information. In this case, the system will be developed from a supply's point of view, lowering the convenience of the users, and making the system less utilized.

Box 9: Electronic Registration System for Korean Cattle

At the early stage of informatization, the ministry of agriculture and forestry planned and implemented an electronic registration system for Korean cattle as a way to enhance agricultural competitiveness by managing Korean cattle systematically, in response to the creation of World Trade Organization (WTO) in 1994.

Korean cattle are famous for its high quality meat and mainly used for pul-go-gi or pul-gal-bi dishes, which are loved by most of Koreans. However, they grow very slowly and are very expensive. In addition, they have been bred not by the giant breeding company with economy of scale, but by small farmers growing 1 or 2 cattle.

The government spent several million dollars to develop the system to electronically and systematically manage the whole cattle bred by farmers scattered over countries, as a way to cope with cattle market-opening and secure the farmers' income. However, the developed system became useless, because the government failed to secure necessary human resources for data collection and input, which were the first prerequisite for system running. It required an excessive amount of specialists to research and input all the cattle scattered over rural and remote areas, and update data real-time, if changes happened. Moreover, whether the users were farmers, public officers, or the national agricultural cooperative federation, was not clearly defined. With these reasons, the system was abandoned hardly being used after development.

A lesson can be gained from this case that the system developed by bureaucrats who are ignorant of reality, and without close examination on the needs of users is doomed to fail.

Box 10: Distance Conferencing System of the Government

Since 1392, the capital of Republic of Korea has been located in Seoul, where most of ministries including the president and the prime minister are residing. Yet, ministries dealing with economic issues such as ministry of finance and economy, ministry of science and technology, and ministry of commerce, industry and energy are located in Kwachon city, several kilometers far from Seoul. As population in Seoul grew larger due to rapid industrialization and urbanization in 1960s, the government decided to relocate ministries dealing with economic issues aiming to move population out of Seoul. Yet, Seoul's population continued to increase, resulting in Seoul's expansion. It also caused a traffic jam over a large area, increasing social costs such as traffic time and expenses. As a result, public officers including ministers and vice-ministers in Kwachon city had to spend more time to have meetings in Seoul. In order to solve this problem, the government developed and installed a distance conferencing system between ministries in Seoul and Kwachon city in 1995. But this system was never used because small technical problems often occurred, and the ministers and high officers, who were considered as main users, avoided using the system; they prefered a face-to-face meeting which enabled them to read the counterparts' facial expression. If the president or the prime minister had used the system, it could have been easily utilized after technical problems were solved.

CHAPTER 11

Managing Critical Factors

11.1. Human Resources

The characteristics of governmental bureaucracy in employment, payment, rotational position and training programs, tends to limit hiring people with technical specialties. Therefore, it is advisable to complement such weaknesses.

Firstly, diverse committees including presidential advisory committee can be used to include experts in the private sector. Composed of university professors, experts of national research institutions and private companies, ministers of related ministries such as MIC, MOGAHA, MPB, the Special Committee for E-government of Republic of Korea can be considered as a governance based on the presidential leadership, securing technical expertise and ministerial balance. In addition, the committee secretariat hires and utilizes private sector experts, along with public officers dispatched from MIC and MOGAHA and experts from NCA.

The second way is to open the major job positions of the government to the external labor market and hire people on competition base. Since 1980s, many countries have extended outside recruiting. Republic of Korea also has institutionalized that 20% directors of ministries should be recruited

from the outside of the public sector in 2000. As a result, from 2000 to 2005, an outside expert has been hired for the Director of E-government Division at MOGAHA. In general, outsider experts have strong advantages in technical specialties but shows disadvantages in managing staffs or networking ministries.

Thirdly, public agencies can be utilized to balance bureaucratic generalists and specialists of the market. In Republic of Korea, experts with Ph.D and Master degrees on information technologies and information society policies are working for such public agencies including NCA, Republic of Korea Information Strategy Development Institute (KISDI), Republic of Korea Information Security Agency (KISA), and Electronics and Telecommunication Research Institute (ETRI).

11.2. Financial Resources

While many agenda on government innovation can be achieved only by reforming legal framework, without financial implication, E-government requires a huge amount of financial input for each stage. Yet, E-government won't be able to secure the necessary budget or be implemented, becoming not core but peripheral agenda. Because there is uncertainty in government innovation and information technologies, because it takes long time to recover the investment on it, and because its outcomes are intangible, E-government may be viewed by citizens paying taxes as a project difficult to accept. In addition, it is difficult to evaluate each ministry for its success on E-government, as the project is implemented across linked ministries. Therefore, it is crucial to devise some other way to secure the budget for E-government, different from the way to get the budget for general government projects.

Table 13: Traditional Budgeting and Budgeting for ICT Investments

	Traditional government budgeting	High-value ICT investments
Fiscal unit	Single-year expenditures	Multi-year investments
Performance	Program-by-program	Enterprise or cross-boundary
Benefit/costs	Financial	Financial & non-financial
Work flows	Effort within existing work flows	Changes in the flow of work
Operations	Ongoing operations	'Start-up' operations
Focus	Control	Innovation

Sources: OECD (2004:54)

Recognizing such features of E-government shown in Table 14 from the beginning, Korean government secured the budget for E-government starting its implementation. Yet, its budgeting was quite different from budgeting for general government projects.

The first way was to invest first and to settle later. MIC and NCA, which were major implementation agencies, first set up and implemented the project plan and budget. Then, the budget ministry approved and settled them later. It was an exceptional way, far different from the existing budget planning and implementation, and would have been impossible without presidential determination and support.

As 'Invest first, Settle later' way got criticized by its difficulty in controlling the budget, a new way to secure the budget was introduced. The Informatization Promotion Fund was created in order to invest in the research and development of IT industry and promote its applications to society. The Fund consists of the following major sources (Informatization Promotion Act §34). Larger part of the Fund has come from revenues of selling of government share of KTA for its privatization and contributions of new mobile phone carriers based upon CDMA technologies.

1. Contributions or loans of the government
2. Contributions of the basic and mobile telecommunication carriers
3. Dividends of the Republic of Korea Telecommunications Authority (KTA)
4. Revenues from selling stocks of KTA, and other public enterprises

Table 14: Korean Strategies to Secure the E-government Budget

Year	Budget Allocation Methods	Managing Agency
1987-1992	Invest first, settle later	MIC (NCA)
1993-2003	Informatization Promotion Fund	MIC (NCA)
2004-Present	E-government Budget	MOGAHA (NCA)

Thirdly, the budget for E-government was separated from the Informatization Promotion Fund, which made focused investment on development of next generation information technologies since 2004, and became a part of regular government budget. Along with this change, MOGAHA instead of MIC was also designated as a major implementation agency. MOGAHA also became responsible for integrating and implementing the lumsum budget for E-government which was separately allocated to each ministry as a part of regular budget in order to enhance cross-agency integration and linkage.

Three methods share a common feature; they all successfully secured efficiency and adaptability of the project by maintaining flexible and integral management of the budget, in spite of the trend of increasing control over the budget. This can be a good lesson for developing countries.

11.3. Technological Resources

11.3.1. Key Components

Technical factors are crucial for E-government as its functions including processing internal tasks of the government and delivering civil services can be done using ICT as media. The major technical factors include technologies on networks, computers, software, and data.

- High-speed network infrastructure including LAN, WAN, and MAN
- Computing facilities: high-end and personal computers
- Operating systems and application software
- Cellular phones and other communication devices
- Domain name policy for the Internet

Korean government successfully established five core databases through the National Basic Information System started in 1987. The project to build up high-speed networks between 1995 and 2015 has been also successfully completed, powered by huge investment. In addition, CDMA technologies, commercialized by the consortium of ETRI, Samsung, LG and Hyundai and others, greatly contributed to the social diffusion and global export of the cellular phone. It was such high-speed networks and CDMA phones that led the social diffusion of the Internet, along with transformation of the authoritarian government to democratic one. Therefore, technology development and commercialization by public and private partnership, establishment of network infrastructure, promotion of informatization mindset, and matured democracy interacted all together, contributing to rapid advancement into information society. As a result, Republic of Korea became one of top countries in Internet penetration rates, broadband penetration rates, cellular phone subscription rates, and wireless Internet penetration rates.

Table 15: Major ICT Indicators in Republic of Korea

Main indicators	2000	2005
Proportion of household with a PC (%)	71.0	77.8
Proportion of household with broadband Internet access (%)	29.9	70.8
Mobile cellular subscribers per 100 inhabitants	58.1	78.0
Proportion of population with wireless Internet access (over 12 years) (%)	27.4	42.8

Source: NIDA(2005.11), Korean Internet Statistics Yearbook 2005.

11.3.2. Government-wide Architecture for Interoperability

E-government requires a government-wide architecture for integration and linkage, as it overcomes 'islands of automation,' which occurs at the early stage of computerizing each ministry and division. Accordingly, the Office of Management and Budget of USA developed and distributed the Federal Enterprise Architecture (FEA) to federal ministries. The FEA suggests a reference model for 5 core factors including performance, business, service components, data and technology, which each ministerial E-government is required to adopt.

Figure 10: Federal Enterprise Architecture of USA

Upper level ——— Lower level

Performance Reference Model (PRM)	Business Reference Model (BRM)	Service Component Reference Model (SRM)	Data Reference Model (DRM)	Technical Reference Model (TRM)

Resource: US Office of Management and Budget FEAPMO(2002).

In Republic of Korea, while setting up the roadmap for the 2nd phase of E-government in 2003, the Special Committee for E-government, the office of the prime minister, MPB, MOGAHA, and National archives and records service have worked together to develop and implement the Enterprise Architecture.

Figure 11: E-government Enterprise Architecture of Republic of Korea

Digital budget & accounting system (MPB)	Information Technology Architecture - Network - Computing (MIC)
Government Business Reference Model (MOGAHA)	
Integrated Evaluation System (the Office of the Prime Minister)	
National Archives & Records System (National Archives & Records Service)	

Box 11: Standard Classification for Government-wide Architecture

As a key initiative of the E-government roadmap, the Special Committee for E-government integrated and linked 5 core factors of E-government including management of budget and finance (MPB), management of records and archives (National Archives and Records Service), performance evaluation(the office of the prime minister), and management of information technologies (MIC), which had been separately implemented so far without consideration on integration. Integrated management of government functions and financial resources can greatly contribute to making the government more efficient, transparent, and performance-oriented.

While budget and finance were planned and implemented by program, the organization and personnel of MOGAHA were managed by function. As they were classified and managed differently, a lot of complex problems occurred but were hardly coordinated due to distinctive interests of each ministry. For example, the performance of the budget allocated to a project could be easily evaluated with the categorization by program budget, but the performance of the general tasks where no budget was allocated would be ignored. On the other hand, the management of the organization and personnel as well as management of records of all organizational activities could be easily done with the categorization by government function, but it was difficult to conduct a performance-oriented evaluation for the management of organization or personnel. This was a matter of decision on which standard should be applied to manage a small department composed of 10 personnel but implementing 100 million dollar worth projects, or a large division whose staffs are over 100, but carrying out 1 million dollar worth projects.

Reviewing all such matters, Korean government organized a task force, referring to the Classification of the Functions of Government (COFOG) UN and OECD proposed, to integrate the classification by program budget and the government function classification by government function into the 5 level-category. The government was able to set up a long-tern financial management plan, and allocate budget and evaluate its performance according to accrual accounting and double book-keeping, using this integrated classification. This project was a global pilot project implemented in cooperation with the World Bank.

11.3.3. Internet Domain Name Policy

As the citizens and the government do transactions through the Internet, the Internet domain name policy becomes very important. Like offline transaction, online transaction also requires a name and an address of the actor. Currently, the Internet Cooperation for Assigned Names and Numbers (ICANN: http://www.icann.org) has been playing a core role in managing Internet address resources globally, along with regional agencies managing the

addresses of each region. In Republic of Korea, the National Internet Development Agency of Republic of Korea (NIDA: http://nida.or.kr) is managing the Korean internet addresses, in cooperation with Asia-Pacific Network Information Center (APNIC), which has control over Asia-Pacific region.

It is desirable to set up a comprehensive framework to manage Internet address resources, which may be scarce as the Internet users rapidly increase into a critical mass. As a matter of fact, China and India have been experiencing a dearth of Internet address resources, because of huge increase in Internet users. In order to cope with this problem as well as technological evolution toward ubiquitous computing, next generation technologies for managing the Internet addresses including IPv6, which allows infinite provision of address resources are appearing to replace the current technology, IPv4.

11.4. Legal and Regulatory Arrangements

11.4.1. Promotion

The necessary laws and regulations need to be newly made or revised as appropriate according to the development level of informatization. E-government requires a balance between promotional factors for system development and distribution and control factors for information security and privacy protection. In general, the laws and regulations tend not to cope with speedy informatization. Such gap needs to be complemented by a certain kind of social purification mechanism such as information ethics.

The laws and regulations can promote people's interests and society's mindset as well as performance-oriented activities of public officers. Politicians, members of National Assembly, media and NGOs as well as the president and governmental officers play important roles in making laws and regulations. As the public officers cannot do any activities which require his full responsibility without a legal base, the legal framework should be reformed before or during the implementation of E-government.

Republic of Korea made the Computer Network Act in 1987 as a legal base to develop 5 National Basic Information Systems. In 1995, the Informatization Promotion Framework Act was enacted to utilize the Informatizaion Promotion Fund for the E-government project of each ministry, under the leadership of the prime minister. The E-government Act was made in 2001 to enhance the linkage with government innovation during the implementation of the 1st phase of E-government. In USA, the Electronic Government Act, similar to Korean's E-government Act was also enacted in 2002. The E-government Act stipulates principles like enhancing a linkage between the government innovation and E-government, improving citizens' convenience, innovating work processes and promoting electronic management, in order to improve the efficiency and productivity of administration as well as the quality of civil services.

Table 16: Major Contents of Laws for Korean E-government

1. Purpose (§1): productivity, transparency, democracy of administration

2. Principles of E-government Projects
   - Citizen's expediency centered (§6)
   - Business innovation first (§7)
   - Electronic processing first (§8)
   - Administrative Information Opening(§9)
   - Agency's obligation of verification (§10)
   - Administrative Information sharing among agencies(§11)
   - Privacy protection (§12)
   - Prohibition of overlapped software development (§13)
   - Outsourcing of technology development and system operation (§14)

3. Informatization of administrative management
   - E-Documentation (§16)
   - E-Authentication (§20)
   - Government business redesign (§24)
   - Standardization (§25)
   - Establishment of information network (§26)
   - Security plan for information network (§27)
   - Opinion gathering using information network (§28)
   - Enhancement of public officials' utilization capability (§31)

4. E-Service
   - Electronic service (§33)
   - Non-visit E-Service (§34)
   - Identity verification (§35)
   - Electronic notice (§36)
   - Electronic provision of administrative information (§37)

5. Paperwork reduction
   - Reduction of paper document (§40)
   - Publication of reduction achievements (§43)
   - Paper Document Reduction Committee (§44)

6. Promotion of E-government projects
   - Performance evaluation (§46)
   - Initiation of pilot project (§47)
   - Diffusion of information system (§48)

11.4.2. Protection: Privacy and information security

The privacy violation and information security appeared as critical problems occurred in the course of implementing E-government. Most of laws and regulations on these problems were made after 2001 when the E-government project was fully under progress and dealt with management of information and knowledge resources, information security, bridging the digital divide, protection of cyber infrastructure. Establishing appropriate legal framework is a prerequisite for implementation of E-government.

Table 17: Major Legal Acts related to E-government

Statutes	Enacting year
Informatization Promotion Framework Act	1995
E-Signature Act	1999
Knowledge and Information Resources Management Act	2001
Information Security Act	2001
Digital Divide Elimination Act	2001
Cyber Infrastructure Protection Act	2001

As the democracy develops and the level of income increases, citizens are getting more conscious of the protection of their lives and properties. Such changes in people's mindset can be viewed as a chance as well as an obstacle for E-government. In Republic of Korea, it was suggested that the National Education Information System (NEIS), implemented as one of unit projects of the first phase of E-government may violate the human right of the individual.

Therefore, institutional and technical efforts should be made to prevent the intrusion of

private information. At first, a practically acceptable policy should be made based on 8 guidelines OECE proposed. In Republic of Korea, the information security was adopted as one of 10 agenda for the second phase of E-government, and the privacy impact assessment (PIA), used to evaluate the impact of a new project on private information, was proposed. In addition, the Privacy Protection Framework Act, which would be a comprehensive approach to personal information, has been proposed.

11.4.3. Regulating Unlawful and Harmful Information

In human histories, legal enforcement tends to be carried out after destructive activities disturbing social order and public peace have occurred. It is because predicting a variety of deviant behaviors of people, and setting a perfect regulatory system in advance to cope with them are almost impossible. Information society also experiences the same regulatory problem with undesirable online actions. Controlling online distribution of improper information tends to depend on offline laws and regulation.

In Republic of Korea, as people argued that regulation on improper information could cool down informatization in its early stage, it was quite moderate in 1990s. Yet, as the dysfuctions of informatization like the mass distribution of improper information including data harmful to teenagers, and cyber attack on a person abusing anonymity, got more serious and frequent, Korean government considered introducing the Internet Real-name System. Even though some NGOs opposed it, arguing that it is a governmental control over the public domain where freedom of speech should be secured, the overall society started to approve the reinforcement of regulation. Along with such experiences, it is desirable to consider the level of E-government in order to decide the degree and scope of regulation on online distribution of improper information.

11.5. Stakeholder Analysis

11.5.1. Officials' Involvement

No matter how much interest the top decision maker shows, E-government cannot be successful without understanding and involvement of public officers. In general, chances are high that the high officers, involved in decision-making process, consider E-government not as core tasks of process innovation, but as peripheral technological projects. The middle and low officers seem to be concerned about changes in work process or lay-off, as their jobs may be replaced by the system. In addition, the officers working at the window may prefer to closely contact the customers face-to-face than to transparently meet them through the information system. Such psychological stress regarding work process innovation and computerization may cause serious reform fatigue.

Therefore, a lot of efforts should be made to support public offiers understand that

E-government is a innovative strategy critical for improvement of the government competitiveness, and a positive sum game beneficial to everyone. Along with incentive systems including development of best practices, seminars and workshops (brainstorming, lectures of experts) can be used to improve public officers' understanding.

11.5.2. End-users' Access

Many countries consider the digital divide as a serious social problem. While young, urban people utilize ICT as a way to increase their wealth by fast online transactions including stock trading, as well as to enjoy entertainments provided by cyber communities, old, rural habitants are getting more excluded from such chances. The policies to solve such deepening digital divide are as follows:

Firstly, E-government should not substitute but complement the public services' conventional delivery methods including telephone, fax, mail and in person. It can achieve broader social inclusion adopting much diverse delivery methods, by complementing conventional ones with electronic ones, unlimited by age, gender, residence or income level (UN, 2005).

Secondly, the underserved group should be provided with access to physical infrastructures along with chances to acquire ICT utilization capability. Therefore, more training opportunities as well as more infrastructures, networks and computer systems should be provided to help them utilize ICT.

Thirdly, the government should actively release its administrative information classified by subject to the public. Information opening is a prerequisite for access to E-government, considered as one of democratic values that secure people's right to know. In particular, the comprehensive classification of information on policies and administration generated within the complex governmental bureaucracy can enable people to easily access information they want. In Republic of Korea, as the 'Public Information Dissemination Act' was enacted in 1998, MOGAHA became in charge of implementing policies on information dissemination. The scope and content of open information have been continuously extended. Yet, the civil society still criticizes that the quality of open information is poor, although its quantity is increasing.

11.6. Outsourcing

11.6.1. Purpose and Necessity

Outsourcing governmental tasks have been extended since 1980s, as one of strategies for enhancing efficiency. USA made it compulsory by Federal Activities Inventory Reform Act (FAIR) to outsource all other works except inherently governmental activities.

Box 12: Outsourcing Principles of E-government Act of Republic of Korea

Public administrative organizations are required to outsource to the private sector the E-government project including development of necessary technologies and management of E-government, unless it is judged that the project cannot be given to the private sector, or can be developed or managed directly by public administrative organizations with much more effectiveness, security and economical efficiency (§14)

In general, outsourcing aims at cost reduction. At the beginning, the peripheral and routine jobs such as building management, catering and driving were outsourced to reduce the cost. However, as more diverse tasks were outsourced, the objectives were also diversified to securing technical expertise, focusing on core tasks, considering the objectives of industry policies. In addition, promoting industry has been one of the main objectives of outsourcing in Republic of Korea.

E-government outsourcing is viewed as a way to secure expertise, rather than to reduce cost. It is because the governmental bureaucracy, run by general management principles, finds it difficult to secure expertise on ever-evolving information technologies, critical for the E-government project, in a timely and appropriate way. The reasons for Korean public agencies outsource the E-government project are as follows: 1) lack of technological and occupational expertise, 2) cost reduction, 3) time pressure, 4) securing objectivity and fairness. The reasons are reflected in the criteria to select IT vendors (refer to Table 18)

In general, criteria used in Republic of Korea to select IT outsourcing vendors for the E-government project give 80% weight to technical factors and 20% to price factors. The technical competence is judged by a company's business records and name value, specialties of participating experts, project implementation strategies and time schedule. For the project requiring specific technologies, technical factors are given up to 90% weight.

Table 18: Criteria of Korean Public Agencies to Select IT Outsourcing Vendors

Vendor selection standards	Projects (%)
Low cost	193 (19.0)
A vendor's reputation and specialties	461 (45.5)

Development experiences	186 (18.3)
A vendor previously worked with	63 (6.2)
Political decision	18 (1.8)
Others	93 (9.2)
Sum	1,014 (100.0)

Source: NCA (2002:121), Analysis of Public Sector Information Resources.

11.6.2. Preconditions of Outsourcing

Many developing countries utilize outsourcing for the E-government project. Yet, the benefit of outsourcing can be maximized only in the competitive market. Countries, whose markets are hardly competitive, need to be careful to adopt outsourcing, which would cause a variety of transaction costs such as information asymmetry, imperfect contracts, non-incentive of observing laws and contracts, instead of cost saving and technical advantages. Such transaction costs also include all the indirect costs for searching and selecting a company, managing the contract, and performing post-evaluation (Williamson, 1985). In addition, the government may bear huge cost by depending on a specific company, making it impossible to achieve the goal of outsourcing. Therefore, a variety of controlling mechanisms are required to cope with such circumstance.

Table 19: Mechanism to Control Transaction Cost

Origin of Problem	Solution	Countermeasure for outsourcing
Asymmetrical information	Open information, signaling	Making guidelines, regulations and manuals
Imperfect contract	Market competition	Changing the forms of outsourcing, competitive bidding
No incentives to observe laws and contracts	Elaborating the contents of a contract in details to deal with uncertain circumstance	Adopting SLA, specifying the contents of a contract to be prepared for emergency situation

Box 13: Request for Proposal and dependency

Public officers prepare a Request for Proposal (RFP) at the first stage of outsourcing the E-government project. RFP is a detailed list of questions submitted to system developers or vendors to determine how well the developer's service or vendor's product can meet the organization's specific requirements. Therefore, writing an RFP requires highly technical expertise, especially at the planning stage, which is quite different from writing a RFP on routine tasks such as system operation and maintenance. However, public officers do not have enough expertise in preparing an RFP, and tend to depend on researchers of subsidiary research institutes, friends and companies to write a draft. Therefore, the preparation of a RFP should be done in a way to avoid dependency and to keep fairness and transparency during the implementation of the E-government project.

11.6.3. Scope and Contract Method

Outsourcing requires elaborate strategies to decide the contract term, the number of contractors and the scope of contract. Firstly, the contract term can be categorized into short-term (less than 1 year), mid-term (1-2 years), and long-term (more than 4 years). The term for project development, including BPR, ISP and system development tends to be specified, while the term for operation or maintenance tends to be an annual base. Choosing short, mid, or long-term depends on market situation, government control and social trust. If trust is weak, the project tends to be contracted for short-term, which cause a lot of transaction costs. On the other hand, with strong trust, a long term contract can be made, reducing transaction costs.

Secondly, either a single company or a consortium of many companies can be contracted. As E-government is co-implemented with government innovation, a consortium of a consulting company and a SI company tends to be recommended. If a large enterprise is leading the market, small and medium enterprises (SMEs) will have little chance to participate in the project. In order to prevent this problem, it is desirable to institutionalize mandatory participation of SMEs in consortium.

Thirdly, regarding the scope of a contract, all processes of the E-government project can be contracted as a turnkey, or unit projects at each stage can be contracted by competitive bidding to the same or a different company. In this case, a contract on each stage like BPR, ISP, system development and maintenance may be made with a different company. Making a contract on each stage through competitive bidding can promote market competition, prevent the organization's dependency on a specific company, and reduce the sunk cost caused by the adoption of a specific technology. However, it bears a lot more transaction costs, required to make and manage a contract on each stage. A

turnkey contract can be advantageous allowing systematic and stable adoption of a specific technology and reduction of transaction costs like making several contracts, but disadvantageous having a possibility of huge sunk cost and transaction costs like dependency on a specific company.

Box 14: Outsourcing E-government in Republic of Korea

Korean government purchases most of hardware, software and servers from foreign companies. Yet, there are a lot of large system integration enterprises such as LG CNS, Samsung SDS, Hyundai, and SK CNC in market for system development. Republic of Korea was able to become the top 11th economy of the world, led by conglomerates in industries like semiconductors, electronics, automobiles, shipbuilding, steel manufactures, and telecommunications since 1960s.

However, the concentration of economic power caused by this development was a big social problem, and the development of SMEs, which had large effects on employment and income distribution, became a pending national task. Accordingly, in order to develop SMEs, the first phase of the E-government project made a consortium of large enterprises and SMEs as a prerequisite for the outsourcing contract. In addition, a large enterprise was restricted from participating in a small E-government project with less than certain amount of budget.

Because developing countries do not have many domestic SI companies able to successfully implement E-government, chances are high that they either select one of miscellaneous SMEs, or depend on foreign companies with a lot of experiences and resources. In this case, proper industrial policy should be implemented to domestically develop technologies and balance the growth of large and small/medium enterprises by utilizing diverse forms of a consortium.

A large company-oriented market economy can hinder stable economic growth achieved through balanced distribution of employment and wealth. The chances are also high that the government becomes dependent on a large company. Therefore, an institutional mechanism should be created by the government to enable both large and small/medium enterprises to appropriately participate in E-government project as partners.

11.6.4. Change Management

Change management is a process to predict issues which may occur after contracting, set up corresponding strategies for them, and solve the problems if they occur. The core of change management includes contract management setting a relationship with the company, fixing price, risk identification, Service Level Agreements (SLAs), administrative control, technology upgrading, and contract termination.

If the public agency does not have capacity to manage changes occurring after contracting, that is, if it is unable to control or check whether many conditions of a contract are fully accomplished, it may become dependent on the company, failing to benefit from outsourcing. In addition, a long-tern contract may cause corruption by inducing a cozy relationship between administration and business, unless a transparent and competitive system is available.

Table 20: Managing Changes in Outsourcing Contract

1. Approach: Contract management, relationship building
2. Pricing: Price list, profit control, benchmarking, renegotiation
3. Perceived risks: Price rise, service decrease, provider dependency
4. Service Level Agreement (SLA)
5. Administrative control
6. Technology upgrading: Renewal
7. Contract termination

11.6.5. Purchasing

The implementation of the E-government project requires the purchase of hardware like servers, software like operating Software and applications, and telecommunication networks like routers. Accordingly, a quite huge amount of resources, approximately 50% of the budget, is usually used to purchase diverse equipments made in other countries in order to develop and utilize a system.

Software products made by a specific company tend to be purchased, as operating software. Yet, implementing a policy to promote the use of open software enables the expense to purchase software to be reduced, not to mention to acquiring technologies for software development.

Linux, open software, is based on open sources, helping development of necessary application services. There is no empirical evidence proving that software based on open sources is much more vulnerable than existing operating software in terms of security.

CHAPTER 12

System Development

12.1. Information Strategy Planning (ISP)

The Information Strategy Planning (ISP) is a disciplined effort to implement the E-government project utilizing ICT. In general, the ISP for the E-government project includes SWOT (strengths, weaknesses, opportunities, threats) analysis, CSF (critical success factors), EA (enterprise analysis), and KPI (key performance indicators).

Firstly, the SWOT identifies the mandates, mission and values of the organization, develop a management plan for strategic issues by analyzing the confronting external (opportunities vs. threats) and internal (strengths vs. weaknesses) environments, and suggests the ideal condition of the organization, that is, the vision of success.

Secondly, critical success factors (CSF) are a small number of easily identifiable operational goals. The CSF identifies the organizational goals defined by top managers which are integrated into the whole organization as critical success factors.

Thirdly, the Enterprise Analysis (EA) identifies the organization-wide information requirements by examining the overall structure of the organization including its

units, functions, processes and data. The EA includes the objectives of informatization, critical information and methods to acquire and use information.

Fourthly, the key performance indicators (KPI) are developed to manage the project corresponding to identified project objectives and CSF.

12.2. Business Process Reengineering (BPR)

12.2.1. Service Innovation and Process Streamlining

The innovation of front office services can reduce not only unnecessary governmental regulations on civil services requiring approval, but also the number of civil applications submitted and visits to the public agencies. More actively, it allows citizens to easily receive a variety of social welfare and cultural services. It can be accomplished through government business reengineering including paperwork reduction and elimination and business process streamlining.

12.2.2. Information Sharing and Standardization

The most important factor for paperwork reduction and work process streamlining is information-sharing among related organizations, which allow each organization to get necessary information including identifications of applicants to deliver accurate and responsible services. A variety of documents used to identify applicants or other details are the transaction costs that a society is required to pay when trust, the social capital, is not well established.

Information-sharing among ministries is difficult in an administrative culture where secrecy and sectionalism is strong. Sometimes, the administrative principle, which emphasizes accountability based on division and specialization of task, may prohibit information-sharing by laws. For example, the National Tax Framework Act of Republic of Korea stipulates that public tax officers are not allowed to hand over information they get from the work to the third party. Therefore, it is required to develop diverse methods to prevent violation and misuse of private information caused by extended information-sharing, while reforming the laws and regulations to extend information-sharing for innovation of civil services.

Box 15: Government for Citizens (G4C) and Information-sharing

Korean government developed the Government for Citizens System (G4C) (www.egov.go.kr) as a major service of the first phase of E-government. G4C is a system that enables citizens to get civil services closed related to personal daily lives, such as resident registration, real estate registration, vehicle registration, private business

registration, and personal tax payment, through the Internet without visiting the organization personally. It is the representative government-wide portal which informs information online on the overall processes of about 4,000 civil services out of 4,400 civil services of central and local governments, accepts online applications for 400 civil services, and issues 8 certificates. In order to make such services possible, 20 core databases are shared among ministries enabling electronic identification of applicants and other details.

The system is, however, criticized because it does not bring that much innovation on processes to administer civil services, although time taken for issuance of civil certificates online can be reduced. As a matter of fact, G4C has been not utilized as much as expected.

Accordingly, the Special Committee for E-government reported the president on the plan to extend information sharing government-widely for paperwork reduction and elimination in July, 2005. Present civil applications system requires time and cost of both customers and front office officers to receive civil applications filled out based on the information government agencies have, and to submit them again to the same or different agencies. For instance, the contractors, who make a construction contract with the Ministry of Construction (MOC), need to submit to the MOC the tax payment certificate which is issued at the National Tax Service (NTS). Citizens and public officers wouldn't need to process such paperwork if MOC and NTS can share information. In order to eliminate such administrative redundancy and inefficiency, the Special Committee for E-government examined the utilization status of all administrative information government agencies maintain and decided sharing of 76 kinds of core information, among which 36 kinds would be shared real-time. This decision will be applied to all central ministries by 2006, to all public organizations by early 2007, and to all financial institutions by late 2007.

The protection of personal information and the accountability of public officers for the misuse and misappropriation of shared information are the major issues surrounding information-sharing. However, departmental secrecy and sectionalism, considering exclusive possession of information as power source is another clandestine reason. Secrecy and sectionalism can be weakened by strong determination for innovation. Yet, as privacy is still an important issue which should be administered.

12.3. System Development

After all preparations, a System development methodology (SDM) should be chosen. The SDM includes 3 representative models; a waterfall (grand design) model based on a scientific management theory, a spiral (incremental) model based on a human relations theory, and a evolutionary (participatory) model based on systems approach. A waterfall model permits a single pass through each phase of development according to the specialist's rational judgement, without any room for iterative trial and error process. A spiral model permits an iterative sequence of incorporating the user requirements initially identified.

Once established, however, the software specifications are little subject to modification. An evolutionary model includes an iterative sequence which allows for identification of a refined set of user needs and requirements prior to each successive build.

A grand design based on a scientific rationality has relatively high possibility for failure, because E-government has some uncertainties affected by a variety of factors including work process innovation, ICT utilization, the users' preference and estimation, along with political and administrative environment. Therefore, developing countries, whose administrative tasks are not yet formalized and rationalized, can increase a possibility of success by adopting a evolutionary model, which secures the participation of the users in each stage of system development to actively receive the needs of the users.

Table 21: Systems Development Approaches

Life cycle model	One pass specifications identification	Iterative development cycles	Deployment of interim software products	Theoretical Characteristics
Grand Design (rational)	Yes	No	No	Scientific management
Spiral (incremental)	Yes	Yes	Possibly	Human relations
Evolutionary (participatory)	No	Yes	Yes	Systems approach

Source: Andrew P. Sage (1995:116), Systems Management for Information Technology and Software Engineering, John Wiley and Sons (adjusted and complemented)

PART IV. POST-IMPLEMENTATION

CHAPTER 13

Monitoring and Evaluation

13.1. Project Monitoring

The PMBOK (project management body of knowledge) performs general management of the project, controlling 8-9 major factors including the scope of the project, schedule, expenses, quality, human resources, telecommunication, risks, purchases and customer relationship. The project monitoring includes all activities performed to ensure the success of the project, such as systematically collecting managerial and financial information generated from the implementation of the project, reconfirming the objectives, identifying and addressing potential problems at the early stage, and collecting input information for post-evaluation. The monitoring plan, corresponding to the evaluation objectives, should be set up at the early stage to effectively carry out monitoring. In addition, it is crucial to comprehensively monitor not only external risk factors impacting the implementation of E-government, but also internal restraints resulted from the system development.

The core risks of the E-government project, identified from many experiences, vary from strategies to information security (refer to Table 22). These risks should be always monitored during project implementation.

Generally, it is desirable to monitor progress during implementation with 3 levels; 'High' means that the project is implemented as planned. 'Middle' means delayed implementation, possibility for lower quality of outcomes and demand for special activities such as coordination among organizations to timely complete other plans. 'Low' means that the plan is hindered by serious obstacles, and will be impossible to accomplish the objective without special interference by the manager.

Table 22: Risks of E-government and Corresponding Strategies

Risk	Problem	Corresponding strategy
Strategy	The project fails to achieve national goal, causing uneconomical management of the organization	Validity review for direction of E-government
Administrative culture	Sectionalism and resistance of bureaucracy against changes and standards	Strong determination and involvement of the leader
Change management	More emphasis on automation of existing process than effective solution suggested by BPR, and more focus on the demand and convenience of the organization than the demand and satisfaction of citizens.	Staffs' participation in planning process, and provision of training for them
Project management	Poor procurement plan and dependency on a few vendors	Development of competitive procurement plan and introduction of incentive system
Finance	Errors in estimation of lifetime cost, little cost reduction, the existence of legacy system and sunk cost	Utilization of neutral and professional financial plan made by the third party
Performance management	More emphasis on the system operating time rather than the performance benefit of the project	Introduction of a evaluation method enabling assessment of long-term, intangible effects
Standard	Adoption of sectional standard based on the internal demand of the organization rather than interoperability among organizations	Cooperation among ministries focusing on ministerial linkage

Risk	Problem	Corresponding strategy
Technology	Adoption of promptly applicable tools and methods suggested by a few vendors and adoption of poorly functioning applications	Adoption of Competitive bidding, piloting/prototyping
Data manage-ment	Errors made by data loss/misuse, possibility of data dependency on other organizations	Data warehouse/backup, process mapping, information - sharing and co-utilization
User demand	Development of the system not reflecting the users' demand	Full adoption of users' demand
Personal information	Violation of privacy, intellectual property right, and classified national information	Control of access to electronic authentication, trainings
Information security	Vulnerability of system, website, networks, and information misuse	Security plan, authentication corresponding to the level of threats, fire walls

Table 23: Check list for Monitoring Progress

Perspective	Factors	Monitoring items
Vision and change	Vision & leadership	-Clear vision and long-term goals -Leader's concern and involvement
	Government reform	-Linkage to government reform -Examination of external barriers
Institutional rearrangements	Inter-agency coordination	-Inter-agency cooperation and coordination -Inter-agency information sharing and interoperability
	Resource allocation	-Budget allocation -Human resource -Technology of the state of the art
	Institutional	-Legal & institutional rearrangements

Perspective	factors	Monitoring items
Customer	Access	-Respond to customer needs -Improving access to online service
	User requirements	-Users and stakeholders
Governance	Accountability	-Inter-agency accountability -Self-correction mechanism -Public relations
	Security and privacy	-Privacy protection -Information security
Project Management	Scope	-Consistency between vision & goals and project
	Time schedule	-Managing time schedule
	Risk	-Overcoming dependency of outsourcing -Protecting privacy and national credentials
	Customer	-Reflecting user requirements -Upgrading user's expediency
	Change	-Explaining rationales for change -Managing change content and its expected effects

Box 16: Auditing by National Computerization Agency

Auditing is a preventive activity to review comprehensively the direction of the E-government project, the efficiency of system development and management, validity and security of data, as a way to prevent and control diverse forms of dangers and obstacles in advance, which occur during the implementing of E-government.

By auditing, the project procedures and methods, recording, features, budget and expense, degrees of completion are comprehensively reviewed in correspondence to the life cycle of E-government system such as planning, development, operation and maintenance.

In Republic of Korea, securing highly professional experts, NCA has been performing auditing for myriad informatization projects including the administrative network project,

since 1987, the year it was established. The auditing performed by NCA is highly technical and enables pre-correction, aiding the organizations to be well prepared for inspection by the board of audit and inspection of Republic of Korea.

Furthermore, NCA is cultivating information system auditors by providing educational programs to information system related experts in the private sector, who get the certificate of authenticated auditors at the completion of training

13.2. Evaluation

13.2.1. Significance of Evaluation Activities

Evaluation is a kind of control activity, systematically analyzing the overall process from objective setting to project completion in order to improve the performance of the project. The evaluation activities include the pre-assessment to generate the best outcome, the performance evaluation to review whether the original objectives are well achieved, the process evaluation to assess the appropriateness of project processes, and the meta evaluation to examine the appropriateness of evaluation system.

In general, the national assembly and the citizens show great interests in the outcome of the input budget. Yet, it is quite difficult to quantitatively measure the outcome of resources input to E-government, shown as Return on Investment (ROI), performance. Accordingly, many countries are developing a variety of methods to measure long-term, intangible and potential benefits of E-government.

Figure 12: Methods of E-government Performance Evaluation

Standard	Expected values	Methodology	Direction
Impact	Intangible, long-term	Balanced Scorecard (BSC)	
Outcome	Benefit and cost	Benefit/cost analysis (BCA) Information Economics (IE)	
Output	Tangible and short-term	Return on investment (ROI) Internal Rate of Return (IRR) Net Present Value (NPV)	

13.2.2. Contents and Methods

The evaluation for the E-government project is difficult because its performance is not long-term and tangible, but short and intangible. Due to such reasons, a lot of evaluation models including the Balanced Score Card (BSC) model, which is good for evaluating long-term performance, are developed and adopted by many countries. The BSC carries out the evaluation by looking at the government projects in terms of finance, internal process innovation, training for staffs' development, customer satisfaction. Yet, most of government projects are evaluated by Returns on Investments (ROI), which is measurable and factual.

Korean government performs the annual evaluation for national informatization project. The evaluation for the E-government project is done for 3 stages; formation, implementation and performance. At the formation stage, the relevance of goals and fullness of the content of the plan are weighted by 20%. At the implementation stage, the efficiency and appropriateness of processes are weighted by 30%. Lastly, at the performance stage, 50% weight is imposed on effectiveness and impact. Imposing 50% weight on performance can be found in many evaluation models including the Office of Management & Budget Program Assessment Rating Tool (PART) made by USA.

Table 24: Criteria and Factors for Policy Evaluation in Republic of Korea

Stage	Evaluation criteria	Weight	Evaluation factors
Formation	1. Relevance of goals	10	1-1. Appropriateness of high level objectives and their correspondence with environment 1-2. Clarity of objectives
	2. Fullness of the content of the plan	10	2-3. Thoroughness of methods 2-4. Implementation of related processes such as collection of public opinions
Implement-ation	3. Efficiency	10	3-6. Project progress 3-7. Effective utilization of resources
	4. Appropriateness of Process	20	4-8. Responsiveness to changes in environment

Stage	Evaluation criteria	Weight	Evaluation factors
			4-9. Promotion for people and stakeholders 4-10. Cooperation with related organizations
Perform-ance	5.Effectiveness	30	5-11. Achievement of the initial objective
	6.Impact	20	6-12. Actual effectiveness of policies

The result of performance evaluation of the E-government project can be differed by the way of setting performance objectives. The objectives should be able to show an ideal and desirable future, while relatively tangible and concrete. Such objectives can help the constituents of the organization perform better management by objectives (MBO).

Table 25: Exemplary Performance Objectives of E-government

Performance index	Sub-index	Measurement
Finance	Budget (personnel) reduction Income increase	Benefit/cost analysis Return on investment
Service improvement	Service response	Reduction in time taken to process civil services (getting approvals/ permissions) The number of visitors and viewers of website
	Customer satisfaction	Staff satisfaction Customer satisfaction
Process innovation	Reduction in repetitive work processes Reduction in overlapping investment in IT	Work process streamlining and reduction in attached documents Co-utilization of database

13.2.3. Organization for Evaluation

The organization for evaluation plays an important role in improving the outcomes of evaluation. Generally, in USA, UK and Canada, the ministry of finance carries out the evaluation focusing on financial performance, while in France, Germany and Japan, the office of prime minister, or a general administrative organization do it focusing on administrative control. As such difference makes dissimilar performance of E-government, it is desirable to set up an appropriate organization for evaluation, reflecting distinction.

In Republic of Korea, the evaluation committee for national informatization, chaired by the minister of the office for government policy coordination, has carried out the evaluation since 1996 when the Basic Informatization Promotion Act was enacted. Nowadays, many of its functions are decentralized and devolved as the evaluation becomes its main function.

CHAPTER 14

Operation and Maintenance

14.1. System Operation and Maintenance

It is important for securing users' convenience to set up the plan for system operation and maintenance after development.

Firstly, a comprehensive plan should be set up for system operation and maintenance. In general, the system receives 'after service' during several months for customization. Yet, chances are high that the operational plan after 'after service' is not developed or implemented. Without full preparation for this stage, the users would experience inconvenience, becoming reluctant to use the system. Therefore, the thorough plan for operation and maintenance should be developed; bearing in mind that it also requires expertise to maintain and operate the system, just like system development.

Secondly, the appropriate budget should be allocated to operation and maintenance. In general, it is about 10% of the budget for system development. However, the leader who considers only visible outcome shows interests in the development of the information system, but does not care for

management of the developed system. As a result, it becomes difficult to secure sufficient financial and human resources as well as appropriate operational structure crucial for system management. In this case, the utilization of the system may be hindered, making the system a total failure. The structure of expenses required for system operation and maintenance after system design and development is as follows.

Table 26: Structure of Operation and Maintenance expenses (example)

1. Hardware
   - 1.1. Maintenance
   - 1.2. Upgrading
   - 1.3. Lifecycle renewal
2. Software
   - 2.1. Maintenance
   - 2.2. Upgrading
   - 2.3. Patent loyalty
3. Operation and maintenance support (government, contractor)
   - 3.1. Supervision of program management
   - 3.2. Operation
   - 3.3. Security
   - 3.4. Helpdesk
4. Education and on-the-job training
5. Other operation and maintenance activities

The system cannot properly provide services if the expenses for operation and maintenance are not reflected at the budget, before the completion of system development. Generally, the cost for system operation and maintenance is not fluctuant unlike system development. However, it should be considered that loyalty may have to be additionally paid for the system developed by other ministry according to an IPR contract. Therefore, it is desirable to make a more detailed contract for system development, in preparation for such situation.

Box 17: IPR for Personnel Policy Support System

Korean government developed the Personnel Policy Support System (PPSS) as one of the first phase of E-government project. It was one of the best Personnel System developed by Korean company, customized to manage the governmental officers according to the human resources management policy of the central government. It manages all processes of human resources management, including recruiting, job

rotation, promotion, on the job training, payment, retirement. By doing so, it enabled the organization to position right persons to the right places, and allowed an individual to manage his/her careers, improving efficiency and transparency of human resources management.

The system was successfully installed at 4 model organizations. However, when distributing the system to other 54 central administrative organization, huge additional cost was incurred. As the contract was made to purchase a system developed by a private company and customize it into the PSPP, whenever other ministry adopted the PSPP, additional payment for the use and customization of the system had to be made. Accordingly, the expansion of the PSPP was blocked, because the additional cost, much larger than the cost for system development, had to be made. Therefore, a lesson can be learned that an indisputable condition for IPR should be clarified in the contract to be prepared for such problem.

14.2. Information Resources Management

Information resources management means a comprehensive system to manage technological resources of E-government, including hardware, software and network. The need for comprehensive management of information resources is increasing, as a lot of resource inputs are made to the E-government project corresponding to rapid development in ICT.

If there is no national plan to comprehensively manage information resources, chances are high that a lot of information resources are duplicated or dead-stored, due to lack of cooperation among ministries, causing an uneconomical result. In addition, many governmental organizations may fail to secure either enough experts or sufficient place, required to manage the information system, causing concerns for the efficiency and security of information system management. Therefore, the effective management of information resources should be viewed as a national task, as critical as system development. Yet, many countries not only fail to set up a comprehensive plan for information resources management, but even do not understand the current status of information resources.

As E-government aims at seamless integration and linkage, many discussions are ongoing regarding the economics of integrated management as well as security of information resources. The integrated management of information resources has many advantages, in general, yet, can be heavily criticized from a standpoint of security. Some argue that the physical collocation of information resources is vulnerable to terrors or physical attacks, while the others point out that it contributes to achieving the economy of scale for information security. In this case, a systematic design for backup functions is crucial.

Box 18: National Computing & Information Resources Administration

Korean government has implemented the National Computing & Information Resources Administration (NCIR). This project is an outstanding case of integrated management of information resources, which can be found only in a few countries including Austria.

The decentralized management of information resources by each ministry caused a lot of problems in the areas such as upgradation of technologies, sharing and co-utilization of information, security, specialization of supporting organizations and personnel, securing spaces for equipments.

As many ministries placed servers at the cramped space of the basement, and delivered services with only a few non-special staffs, the security and management turned out to be vulnerable. Unlike pure back-office tasks, a small error of information resources management for online civil services can result in a huge social problem.

The NCIR project was initiated as one of 11 unit projects of the first phase of E-government to solve such problems, but terminated only completing the BPR for 2 years, due to serious confrontation among ministries. The major issues included the economy of scale, security and technical expertise. However, the real key issue was who will be responsible for the NCIR.

The second phase of E-government was able to complete ISP, designated MIC as a main ministry responsible for the project, selected the site and the building for the first center, and started to move the information system including servers in October, 2005. The 2nd center is under construction at the provincial city, hundreds kilometers far from the 1st center. In a standpoint of security design, it is the most important to keep geographical distance between the 1st and the 2nd center, and to design a real time mutual backup system. About 300million USD is invested in the NCIR project.

Most outcomes of the E-government project are intangible, like service delivery through the computer. On the other hand, the NCIR is able to show some physical outcomes such as a physical location, bringing promotional effects.

CHAPTER 15

Utilization Management

15.1. Utilization Management

15.1.1. Publicity activities

One of practical problems the E-government project is facing after completion is how to promote the system utilization of the users. The system can be fully utilized, delivering services customized to reflect users' interests and securing convenience and timeliness of usage, based on high acknowledgement of users regarding the services.

There is a paradox promotional activities face; the active promotion of the system by the government aiming at increase of system utilization, will lead to high expectation of users, making even small errors of system operation intolerable. On the other hand, without active promotion, the system will be poorly utilized since users' acknowledgement for services provided by the system is low. Therefore, the level of promotional activities should be appropriately decided so that E-government services are not recognized as a panacea of civil services.

One solution for this dilemma is to make people understand the fact that information services, unlike face-to face administrative

services, are delivered online, causing some administrative and technical problems, which can be perfectly customized after trials and errors at the early stage. For this, the Gartner Group suggested the Hype Cycle Mode of E-government; the peak of inflated expectation for E-government, caused by a technical trigger, will soon be lowered while going through the trough of disillusion. After moving up the slope of enlightenment and the plateau of productivity, it evolves into the maturity level. (Gartner, 2002).

15.1.2. Training

Appropriate trainings to facilitate users' system unitization are one of important post-implementation activities.

15.2. Feedback

Feedback is an activity of comprehensive reviewing the outcomes of E-government processes including planning, implementation and evaluation, and applying the learning to the next project. The implementation of E-government generates a variety of success and failure cases. In order to feedback the studying result of success and failure cases to the next project, the responsibility of keeping daily records should be assigned to a staff. At the same time, it is desirable to make some of committee members and public officers, who participated in the previous E-government project, work for the next one as well, in order to keep work consistency and continuity in spite of power transition.

Box 19: Recording the Implementation Processes of the Project

The special committee for E-government preserved the records of the comments each member made and the meeting minutes generated during the implementation of the first and second phase of E-government. In addition, it published the white paper on E-government, which contained all related records and documents including the project plan, progress reports, the list of participants (committee members, public officers, private companies), success factors and restraints, lessons. The records and archives are important, being used not only as a tool to secure administrative transparency and responsibility but also as critical learning materials for next E-government project.

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