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# DEVELOPING DIGITAL GOVERNANCE

## SOUTH KOREA AS A GLOBAL DIGITAL GOVERNMENT LEADER

Choong-sik Chung

ROUTLEDGE

# Developing Digital Governance

Why and how did South Korea become the world's top digital government leader? This book examines the Korean model and how it is different from the digital government models of the West, specifically of the United States and the UK. The book also looks at the successes and failures that South Korea has encountered during the process of helping developing nations set up digital governments.

The book begins with the origins and historical development of digital governance. It examines digital government strategies and informatization policies in Korea's nation development and its promotion of the information and communications technology (ICT) industry. The book explains that one of the key successes was the result of leadership and a strong pan-governmental propulsion system, namely ICT governance. The book also suggests a new digital government development model in response to rapid changes in the ICT environment, specifically in view of the Fourth Industrial Revolution. It is a useful reference for developing countries that are looking at developing their own national information master plan, including digital government.

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# Developing Digital Governance

## South Korea as a Global Digital Government Leader

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Routledge
Taylor & Francis Group
LONDON AND NEW YORK

First published 2020
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
52 Vanderbilt Avenue, New York, NY 10017

*Routledge is an imprint of the Taylor & Francis Group, an informa business*



*British Library Cataloguing-in-Publication Data*
A catalogue record for this book is available from the British Library

*Library of Congress Cataloging-in-Publication Data*
Names: Chung, Choong-sik, author.
Title: Developing digital governance : South Korea as a global digital government leader / Choong-sik Chung.
Description: Milton Park, Abingdon, Oxon ; New York, NY : Routledge, 2020. | Includes bibliographical references and index.
Identifiers: LCCN 2020001320 (print) | LCCN 2020001321 (ebook) | ISBN 9780367150051 (hardback) | ISBN 9780367493202 (paperback) | ISBN 9780429054426 (ebook)
Subjects: LCSH: Internet in public administration–Korea (South)
Classification: LCC JF1525.A8 C48 2020 (print) | LCC JF1525.A8 (ebook) | DDC 352.3/802854678–dc23
LC record available at https://lccn.loc.gov/2020001320
LC ebook record available at https://lccn.loc.gov/2020001321

ISBN: 978-0-367-15005-1 (hbk)
ISBN: 978-0-429-05442-6 (ebk)

Typeset in ITC Galliard
by Newgen Publishing UK

# Contents

# Acknowledgement

This work was supported by the National Research Foundation of Korea Grant funded by the Korean Government (NRF-2017S1A3A2066084).

# Introduction

# 1 From electronic government to digital governance

## Introduction

Today, we are moving beyond the global village and leaping towards a real-time-networking, hyper-connected world. Countries worldwide are putting continuous effort into strengthening their national competitiveness to join the club of advanced countries. In order to enhance national and government competitiveness, it is necessary to innovate government continuously. Now, with the advent of the intelligent information age, these government innovations are entering a new phase of digital governance. The evolution of government innovation in the past 30 years can be summarized in terms of e-government and digital government.

Along with the rapid development of smart intelligent information technology, the environment of government innovation is also changing rapidly. Research reports even predict that the state and the government itself may disappear in the future (Haan, 2015). Therefore, it is necessary to understand the historical development and trend of government innovation to cope with the upcoming changes. Digital governance, beyond digital government and e-government, will become necessary for governments to function properly in the near future.

Government innovation, which began in the United Kingdom and the United States, combined with the adoption of information technology to create a paradigm of new government innovation labelled e-government and digital government. Through the United Nations, this trend of innovating governments spread around the world and has led to considerable achievements in the governments of New Zealand and Australia in particular. In this process, South Korea has quickly established itself as a global leader of digital government, based on the implementation and use of high-speed information communication infrastructure and technology (ICT). South Korea is the only country in the world to have transitioned from an aid recipient to a donor; it is continuously expanding its contribution of ICT in official development assistance (ODA). Consequently, many developing countries are trying to implement digital governments by benchmarking e-government and digital government projects in South Korea.

Digital governments are now adopting intelligent information technologies and rapidly evolving into intelligent government systems, a transformation that

needs to be accompanied by appropriate digital governance structures. These intelligent information technologies are rapidly changing the form and function of government, affecting all administrative activities and decisions. Therefore, establishing smart digital governance in response to the era of intelligent information has emerged as an important national agenda for governments around the world.

In this chapter, I would like to introduce the government innovation trend and the historical development process in the United Kingdom and the United States, and explain why and how South Korea became a global leader in digital government. Based on the experiences of and case studies in South Korea, I will discuss the strategies that developing countries can use to implement their own digital government and digital governance framework.

The contents on the transition from e-government to digital government covered in this chapter can be summarized as follows.

- The changing process of governmental reform
- The UN e-Government Survey
- The emergence of digital government
- Smart AI government

## The changing process of governmental reform

Many countries, including South Korea, are influenced by the United States in various areas, including the economy and industry. Hence, government innovation in South Korea was historically implemented by adopting the US cases and learning from their experiences. However, it is important to note that the origin of modern government innovation is not the United States, but the United Kingdom. After experiencing the economic crisis of the 1970s, the UK used government innovation as a means to overcome hardship. The idea of government innovation spread to the United States, combined with information technology and emerged as the e-government that was later introduced to South Korea.

### *The need for government innovation*

The governments of all countries of the world want to succeed. However, historically it has been very difficult to find government success in many countries – including the United States and the United Kingdom. Over the past 100 years, governments around the world have devoted much of their efforts in administrative reforms to implementing small and efficient governments. However, despite their efforts, the size of government continued to grow and inefficiency has persisted throughout. This has been because most administrative reforms are carried out without the support of information and communication technologies (ICTs) that have led to overall change in society.

In addition, in many countries, government innovation has evolved in response to political need and policy priorities for maintaining the regime, including the

coordination of fragmented and ad hoc organizations and the reduction of personnel. The reforms that are temporary and exhibited in nature are not only small, but they can also deepen the distrust between government and the citizen by strengthening the negative image that the people have about government.

In general, governments experience less difficulty in mobilizing the physical and human resources necessary for operation than private organizations. Once a government enacts laws and ordinances, its people are subject to obedience, so the government can easily mobilize human and material resources without much effort. Therefore, the government does not actively collect resources but rather responds passively. On the contrary, from the standpoint of the citizen, the people do not have an alternative choice in the actual administrative process, so they are forced to accept it despite the government's unfavourable attitude or unfair treatment.

The fact that there are no alternatives for the people to choose other than the current government means that the government has no risk of bankruptcy.[1] Also, if necessary, the ability to mobilize resources relatively easily without aggressive efforts means that government feels less pressured to cut costs. Thus, government organizations that lack the risk of bankruptcy or the need to reduce production costs are likely to be the most inefficient and dysfunctional organizations, which is why reforms in the government sector are urgent and necessary.

A government is also an organization that responds slowly to change. Although the external environment of the government organization has changed drastically, there still remains the bureaucratic inertia of the industrial society within the organization, which is an obstacle to change and hinders the enhancement of government competitiveness. In addition, government does not properly perceive the needs of the people, who desire quality service that differs from past practices. It does not know what the public wants, what services the public needs and what government should do to provide quality services to the public.

Government, which has been rigid and insensitive to change, can no longer be an exception to the flow of change in order to survive amid the evolving environment. Therefore, there is a need for the government sector to make innovations that part with past practices and adapt to the new environment.

### *The development process of government innovation: new public management*

In the United Kingdom and the United States, from the 1980s market-oriented government reforms were implemented in response to existing government failures. These government reforms, named New Public Management (NPM), were aimed at building a "small and efficient government". NPM was developed as part of an effort to make the public service more "businesslike" and to improve its efficiency by using private-sector management models.

The New Public Management theory is a combination of "market preference" and "new management". The concept of "market preference" includes competition and customer-first principles. It aims to provide improved administrative services by maximizing competition and customer choice to existing exclusive

government services. Therefore, NPM promoted the policy of prioritizing existing citizens as customers. In NPM, citizens are viewed as "customers" and public servants are viewed as public managers. NPM reforms use approaches such as customer satisfaction initiatives, customer service efforts, applying an entrepreneurial spirit to public service and introducing innovations.

"New management" greatly mitigates internal control in personnel and budget and gives managerial discretion to the line manager. This is an attempt to improve the administration method to realize an entrepreneurial government (with attention on performance) that allows the frontline public managers to take responsibility and improve performance. In order to practise these principles, governments introduced privatization, private entrustment, customer-oriented citizen charter systems and the use of techniques such as total quality management (TQM) to promote competition and customer service.

### *The beginning of government innovation in the United Kingdom*

The first practices of New Public Management emerged in the United Kingdom under the leadership of Prime Minister Margaret Thatcher. In the 1970s, the UK was suffering from the so-called chronic UK illness characterized by high cost and low efficiency due to the overall economic downturn and excessive social welfare, continued wage increases due to the strong influence of unions and a decline in productivity. Therefore, in 1976, the UK was placed in a situation to receive financial support from the International Monetary Fund (IMF).

Margaret Thatcher, the Conservative prime minister in 1979, declared that "the British have been abandoning socialism and preparing for a new beginning through the failure of the last three decades". She argued that the policy of the social welfare state, which had been maintained for 20 years by the Labour Party government in the UK, had side effects such as chronic low growth. She embarked on economic reforms across all sectors of the economy, with an emphasis on market economy principles for the resolution of the UK sickness and the country's transformation into a low-cost, highly efficient economy.

Since her inauguration, Prime Minister Thatcher has been known as the "Iron Lady" by paving the way for public-sector reforms such as government spending cuts, privatization of public enterprises, deregulation and competition, and bold and innovative policies. This government reform was mentioned as the ideological aid of the neoliberalism that was leading the world economy at that time, in line with the "Reaganomics" carried out by Ronald Reagan's Republican government in the US.

She succeeded in winning a third consecutive term and reformed the labour market by revising five labour laws during her service, which lasted until 1990. From 1980 to 1987, the number of public servants decreased by 110,000 from 750,000 to 640,000 and privatized 50 state-owned enterprises from 1979 to 1989. In 1986, the UK government carried out a financial reform known as the "big bang".

The structural reforms that Margaret Thatcher pursued during her administration appeared successful. Accordingly, New Zealand followed suit in 1984, followed by Ireland in 1987. During this process, the OECD published a report on the "Progress in Structural Reform" in 1990 and recommended that its members follow Margaret Thatcher's path (OECD, 1990).

### *Government reforms in the United States centring on e-government*

Thus, government innovation that began in the UK in the 1980s was also adopted in the United States in the 1990s. In the 1980s, the Reagan administration had pursued Reaganomics according to its neoliberal ideology. Specifically, this can be summarized as a reduction in expenditures, a drastic reduction in income taxes, a relaxation of government regulations on businesses and a stable financial policy.

This government innovation became more concrete with the inauguration of President Bill Clinton in 1993. It was "reinventing government" that provided the theoretical basis for the innovation of the Clinton administration, whose government reform model came from a book by David Osborne and Ted Gaebler, *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector*, published in time for the 1992 presidential campaign (Osborne & Gaebler, 1992).

In March 1993, President Clinton stated that he planned to "reinvent government" when he declared that "our goal is to make the entire federal government less expensive and more efficient and to change the culture of our national bureaucracy away from complacency and entitlement toward initiative and empowerment" (NPR, 2001).

President Clinton created the National Performance Review (NPR) on March 3, 1993, with Vice President Al Gore as its leader. The NPR was rechristened during President Clinton's second term as the National Partnership for Reinventing Government in 1998. The NPR included about 250 career civil servants, and a few state and local government employees and consultants, with a mission to create a government that "works better, costs less, and gets results Americans care about". NPR was the longest-running reform effort in US history.

The four principles of reinventing government pursued by the NPR are as follows.

- putting customers first
- cutting red tape
- empowering employees to get results
- cutting government back to basics

The NPR adopted electronic government as a means to provide the best customer service and to increase electronic access to government. During the twentieth century, ten administrative reforms were carried out in the United States, but all failed. Only the eleventh attempt at governmental innovation by the NPR is regarded as a successful administrative reform – the reason being President

Clinton's leadership delegation to Vice President Al Gore and the commitment of 250 dedicated public officials. However, the most important success factor for the NPR was the implementation of electronic government and the use of information and communication technology (ICT). Electronic government, first implemented in 1993 as a means of administrative reform in the United States, has now spread all over the world and has become a challenge for all countries.

## The UN e-Government Survey

When electronic government was adopted in the United States in 1993, many countries became interested and started to implement e-government of their own. The development phase of e-government and electronic civil service delivery has long been a major concern of e-government research. This tendency was especially evident as international organizations such as the United Nations and multinational consulting firms conducted comparative analyses of electronic civil administration services in various countries around the world. This developmental-stage model was based on the stage of development or maturity of e-government. Analyses of the development stages of e-government were conducted by global consulting firms such as Gartner Group (2000), Deloitte Research (2000a) and Accenture (2001).

### *UN e-Government Development Survey*

Since 2003, the United Nations has been evaluating the level of e-government around the world. Initially, the evaluation was jointly conducted with the American Society for Public Administration (ASPA), but since 2008 it has been evaluated biennially by the UN Department of Economic and Social Affairs. The UN eGovernment Survey report is the only global report that assesses the egovernment development status of the 193 UN Member States. It serves as a tool for countries to learn from each other, identify areas of strength and challenges in egovernment and to shape their policies and strategies in this area. It is also aimed at facilitating discussions of intergovernmental bodies, including the UN General Assembly and the Economic and Social Council, on issues related to egovernment and development and to the critical role of ICT in development.

#### *What is e-government?*

According to the UN website, e-government is defined as follows.

> E-government has been employed to mean everything from "online government services" to "exchange of information and services electronically with citizens, businesses, and other arms of government". Traditionally, e-government has been considered as the use of ICTs for improving the efficiency of government agencies and providing government services online. Later, the framework of e-government has broadened to include use of ICT

by government for conducting a wide range of interactions with citizens and businesses as well as open government data and use of ICTs to enable innovation in governance.

E-government can thus be defined as the use of ICTs to more effectively and efficiently deliver government services to citizens and businesses. It is the application of ICT in government operations, achieving public ends by digital means. The underlying principle of e-government, supported by an effective e-governance institutional framework, is to improve the internal workings of the public sector by reducing financial costs and transaction times so as to better integrate work flows and processes and enable effective resource utilization across the various public sector agencies aiming for sustainable solutions. Through innovation and e-government, governments around the world can be more efficient, provide better services, respond to the demands of citizens for transparency and accountability, be more inclusive and thus restore the trust of citizens in their governments.

(https://publicadministration.un.org/egovkb/en-us/About/UNeGovDD-Framework)

*The e-government concept of South Korea's Electronic Government Act*

The Electronic Government Act (hereafter the e-Government Act) in South Korea has been implemented since July 1, 2001. This Act defines the concept of e-government as follows.

**CHAPTER I GENERAL PROVISIONS**

**Article 1 (Purpose)**

The purpose of this Act is to facilitate the efficient realization of electronic government, enhance productivity, transparency and democracy in the public administration, and improve the quality of life of citizens by providing for fundamental principles, procedures, methods of promotion, and other relevant matters for the electronic processing of administrative affairs.

**Article 2 (Definitions)**

The terms used in this Act shall be defined as follows:

The term "electronic government" means a government that efficiently coordinates administrative affairs between administrative agencies and public institutions (hereinafter referred to as "administrative agencies, etc.") or conducts administrative affairs for citizens by digitalizing administrative affairs of administrative agencies, etc. using information technology.

According to the definition in the e-Government Act, e-government refers to the new government innovation strategy that has been adopted by most countries to improve the efficiency of administration by utilizing information and communication technology that will ultimately improve the accessibility and utility

of public services. E-government is not merely limited to applying information and communication technology to administrative affairs, but is a key means for administrative reform and service innovation such as the improvement of the government operating system, the restructuring of the organizational system, the rational adjustment of government functions and the improvement of service delivery methods.

However, what should be noted in the e-Government Act is the purpose rather than the concept of e-government. The rationale for promoting e-government is not simply to improve administrative productivity and transparency, but to improve the quality of life of the people through the realization of democracy.[2]

### *South Korea's emergence as a global leader in e-government*

South Korea's emergence as the world leader in ICT – in fields such as broadband internet, semiconductors and third-generation mobile and so on – has not been an accident. The government had specifically set this as its goal. It is no coincidence that large investments in broadband infrastructure corresponded with recovery from the detrimental effects of the Asian financial crisis of the late 1990s. Again, it was because the South Korean government specifically planned for this, despite severe conditions imposed by the IMF in its assistance.

After going through continuous efforts in e-government and national informatization, South Korea has become one of the global e-government leaders, obtaining the highest scores in the UN's e-development index and e-participation index. South Korea's e-development index ranking as assessed by the United Nations improved from fifteenth in 2001 to be ranked first out of 192 countries worldwide in 2010, and it was also ranked first place in the e-participation index in 2010, 2012 and 2014 (UN, 2010, 2012, 2014). Moreover, many of South Korea's e-government practices until now have been introduced to the world as best-case study examples and have received worldwide acknowledgment.

In addition, the high level of South Korea's informatization has been recognized by the world, as can be seen from the fact that South Korea was ranked first for three consecutive years in the International Telecommunication Union's (ITU) Digital Opportunity Index. The successes of South Korea's e-government services are selected as best practices. For example, with its e-customs system UNI-PASS, which established an online export and import system for the first time in the world, the South Korea Customs Service won the WCO (World Customs Organization) Trophy in 2006 for intellectual property right protection with the fastest customs system among 169 member countries.

An e-government initiative is recognized as a key strategic requirement for a knowledge-based society in the twenty-first century (Accenture, 2001; Deloitte Research, 2000b; Gartner Research, 2002). Many governments, including that of South Korea, are allocating resources to establishing e-governments. An internet-based government can deliver government services to citizens and private businesses more efficiently with broader access and cost savings across

agencies. As an information network, an e-government can increase citizen participation in government to achieve "open government".

South Korea began to channel efforts into laying the foundations for e-government in the late 1970s. Through the Five National Computer Network project of the early 1980s, the Comprehensive Plan for Korea Information Infrastructure Establishment project and the National Basic Information System project of the late 1980s, the South Korean government established a high-speed communications network and stored vital government records – resident registration, real estate and vehicle records – in digital format to create the foundation for e-government.

The creation of an e-government platform is necessary to keep up with the emergence of a new paradigm that will change government practices and services in the twenty-first century (OECD, 2003). An e-government will play a key role in expanding national competitiveness (NPR, 1997). An e-government initiative is the most effective citizen-centred system available to meet the needs of citizens and private businesses and will provide higher-quality and faster government services. Government will become more transparent, effective and accountable through e-government services and will expand the use of information technology among citizens and private businesses (OMB, 2002; NAO, 2002).

The success factors of the South Korean e-government are summarized as strong political leadership, a clear vision and policy objectives, the project's strategic priority and human and financial resource distribution. Generally, it is known that government will become more transparent and effective through an e-government service. Thus, South Korea improved its national competitiveness by using e-government and is now recognized as a global leader in the field. The details will be discussed in the relevant chapters of this book.

## The emergence of digital government

The analogue, paper-based government systems of the past are evolving into digital governments through the adoption of e-government. In the process, new government innovation strategies including digital transformation are being proposed.

### *Changes to digital government*

In the mid-1990s, terms such as cyber government and virtual government were used along with e-government (Fountain, 2001). In Europe, the term "government online" was widely used. Since the early 2010s, the term "digital government" began to replace e-government. In addition, many consulting firms also called for digital transformations to the digital economy. Consequently, digital government policies were pursued in many countries, including in the EU. This trend was accelerated in November 2012, when the UK government announced its Government Digital Strategy (now known as the Digital Government Strategy). The OECD also ceased to use the term e-government, which had been

in use since 2003, and has begun to promote digital government since 2014 (OECD, 2014).

In the process, the open government data (OGD) projects that began in the mid-2000s were also influential. The OECD has anticipated that OGD projects will promote transparency, accountability and value creation in many governments around the world by making government data available to the public.

The OECD released its Recommendations on Digital Government Strategies in 2014. Subsequently, in 2016, the OECD published its Digital Government Strategies for Transforming Public Services in the Welfare Areas. Furthermore, the OECD continues to publish reports that measure the level of digital government in its member countries (OECD, 2016).

In July 2014, through the OECD Council, OECD member countries formally adopted a Recommendation urging "that governments develop and implement digital government strategies" to assist and guide them to achieve that digital transformation.

> The new digital environment offers opportunities for more collaborative and participatory relationships across stakeholders to actively shape political priorities, collaborate in the design of public services and participate in their delivery, with the public value chain highlighting changes to public sector boundaries. New approaches are needed to support a shift from government-centred services, through a focus on citizen-centred approaches, and on to environments in which citizens and businesses determine their own needs and address them in partnership with governments (people driven approaches), which are supported by new governance frameworks and funding arrangements specific to digital innovation projects considered in a number of the cases.
>
> (OECD, 2014)

As compared with e-government, the digital government proposed by the OECD focuses on strengthening digital communication and the linkage between the government and citizens through the use of diverse and advanced ICT. Therefore, digital government services will be aimed more towards offering personalized or individual-orientated rather than "citizen-orientated" services. Eventually, digital government will help improve transaction services between citizens and governments through advanced ICT technologies. Therefore, in digital government, it will be important to establish digital governance through the electronic participation and decision making of citizens.

### *Digital transformation*

Originally, digital transformation was defined as a business activity that enhances a company's competitiveness or pursues new growth while responding to environmental changes triggered by digital technologies such as mobile, the cloud,

big data, artificial intelligence (AI) and the "internet of things" (IoT). However, although digital transformation was mainly used in the industrial context to solve social problems by utilizing existing technology or new technology, the concept of digital government was derived from the process of government adapting to digital innovation. As a result, many countries around the world are pursuing digital government policies by establishing new ministries that oversee digital innovation.

According to the OECD (2014), e-government refers to the government using ICT, especially the internet, in order to achieve a better government.

Contrarily, digital government is part of government modernization strategies. This term refers to a digital government ecosystem of government actors, non-governmental organizations, industry, civic associations and individuals who use digital technology to create public value and support access to data, services and content through government interactions (OECD, 2014).

Digital government involves the optimal use of electronic channels to improve citizens' satisfaction and competitiveness in service delivery, while increasing the productivity of public services and increasing confidence and participation levels (Eggers & Bellman, 2015).

Digital government can be seen as an advanced concept of e-government, which connects governments and citizens in new ways that utilize social media, mobile, big-data analysis and new AI technology. As such, digital governments utilize more diverse digital technologies than e-governments to dramatically improve public services, improve citizen satisfaction and emphasize citizen participation and government–citizen interaction.

Digital government and e-government have similarities in using ICT for better government operations. However, recent developments suggest that digital government can be seen as an extension of e-government in that it uses public information and digital information technology to emphasize the interaction between government and major actors.

## Smart AI government

Artificial intelligence experts have for a long time predicted that computers will replace human actions and ideas. Now, with the rapid development of digital technology, this is becoming a reality. Today, governments in many countries are evolving into intelligent governments by introducing these artificial intelligence technologies.

### *Evolution to the Fourth Industrial Revolution*

The Fourth Industrial Revolution refers to the change in the industrial environment where artificial intelligence maximizes automation and connectivity. The term was first mentioned at the World Economic Forum in Davos, Switzerland, on January 20, 2016. Though the keywords presented by scholars vary slightly,

machine learning and the development of artificial intelligence are generally regarded as the main means.

The theme of the 2016 Davos Forum was "Mastering the Fourth Industrial Revolution". The Fourth Industrial Revolution is an industrial revolution created by ICT convergence. In the era of the Fourth Industrial Revolution, new products using artificial intelligence robots, IoT, mobile, 3D printers, unmanned vehicles, nanotechnology and biotechnology are playing a driving role in social development. These technological innovations can revolutionize the way people live, as well as the governance system of industry, society and government. With this Fourth Industrial Revolution, we are entering a new world, which will change the way we live. The scale, scope and complexity of these changes will be completely different from what humanity has experienced before.

### *Examples of intelligent government*

As the Fourth Industrial Revolution reaches its maturity, it is expected that fundamental changes will take place in public-sector operations. With respect to the Fourth Industrial Revolution, I summarize the domains and examples of transition to intelligent government by introducing intelligent information technology in the government sector.

Much of the administrative work related to monitoring and supervision is highly likely to be carried out using intelligent drones. With regard to surveillance and supervision, there is a growing possibility of application in a wide range of public administration domains such as police and environmental surveillance, agriculture, forestry and maritime surveillance and supervision, as well as public safety, including firefighting and disaster prevention.

Simplified administrative services that are performed routinely are highly likely to be performed by an intelligent robot equipped with an AI function and chat-bots in the case of an information service. Most likely, it will be increasingly possible to utilize AI systems in the fields of self-administration, civil affairs administration and counselling, and simple administrative tasks with simple repetition according to regulations and procedures.

Enfield London Borough Council in the UK has been using civil affairs counselling AI secretary Amelia since 2017 to support budget cuts from the central government and for the quick and efficient handling of complaints by local residents. Local residents who enter the Enfield Council website can easily gain access to the service through conversations with Amelia (https://new.enfield.gov.uk). Robot consultants, which provide optimal solutions and provide consultation to troubled people who are unaware of administrative procedures or beneficiary services, are now being used in many countries. Since 2017, South Korea has been using these chat-bots for the issuing of passports and to handle parking violation vehicle collection notices.

Administrative actions are increasingly being replaced by various automation systems and devices based on the internet of things (IoT). There are various examples of IoT, such as intelligent CCTV, which is applied to nationwide

information collection and utilization as well as the traffic information and traffic control fields, and the emerging infrastructure relating to autonomous vehicles.

Even the administrative judgements that are perceived as human behaviours are becoming more likely to be replaced by AI judgements. Recently, US private legal service companies have adopted artificial intelligence as an official legal service, and the use of AI in various specialized fields such as law, finance and connected homes is expanding. However, despite the increased availability of AI to support managerial judgement, the final judgement responsibility will depend on policy decisions due to the nature of the administrative act.

In a rapidly ageing society, a considerable portion of healthcare services, which will greatly increase the proportion of government spending and service personnel, will be supported by biotechnology, as well as IoT, artificial intelligence and chat-bots, to name a few. Demand for healthcare services in countries such as South Korea, which has a rapidly ageing population, is likely to lead to a swift depletion of national resources. The need to use new technology in healthcare services will be even greater in order to alleviate this fiscal pressure.

### *The age of digital governance: post-NPM*

As we have seen so far, the emergence of e-government and digital government is rapidly changing the mode of government operation. The concept of governance that emerged in the 1980s was not a concept of government operation in the traditional sense, but a concept that led to coordination and cooperation to solve common problems. This governance changed into e-governance in the era of e-government. In the past, e-governance focused on providing citizens and business with efficient, convenient and transparent services by utilizing information and communication, and by enabling citizens to directly participate in political activities. Therefore, e-governance emphasized participation in e-democracy, e-voting and online political activities.

Now, with the rapid adoption of intelligent information technology and social network services (SNS), there is an increasing demand for digital governance that is suitable for the digital government era. Of course, the concept of digital governance can be identified differently depending on the ICT level of a country or society. However, digital governance from the viewpoint of digital government is about figuring out how to streamline the work processes and decision making processes through citizen participation in all fields of national operation that encompass both private and public sectors.

In a broad sense, digital governance is the process of using digital information technology to solve public problems through government, civil society, civilian and citizen cooperation. Therefore, digital governance is becoming more important than ever, as the interaction between citizens and governments in digital governments can be expanded more widely than ever before and various digital information technologies become available for use.

This digital governance allows citizens to participate in government operations and to influence the policy decision making process. Citizens are no longer passive recipients of governance services, but can be actively involved in determining the types and standards of government services they want, as well as the governance structure. Therefore, digital governance emphasizes citizen participation in the decision making process more than past e-governance, as well as emphasizing accountability and transparency.

Now, via digital government, citizens are free from their status as customers of administrative services and participate in making decisions about the utilization of digital information technology, which is used within the administration for administrative and business development, delivery and management purposes. Digital governance, therefore, aims at citizen-led policy decision making processes by using digital information technology to strengthen real-time interaction between citizens and the public sector and to respond to citizens' needs in a customized way. Therefore, digital governments are demanding a new way of government operation that is completely different from that of the past.

## The purpose of this book

South Korea ranked first in the world three consecutive times in the UN e-Government Survey, in 2010, 2012 and 2014. This was possible because of the establishment of ICT infrastructure that involved the implementation of a high-speed information and communication network in the shortest time. It is also one of the world's best performers in terms of mobile phone and internet use. Therefore, South Korea is now recognized as a global leader by many countries in the field of e-government and digital government.

Given this background, this book was designed with two purposes. The first is to introduce the development process and the contents of South Korea's ICT and digital government field over the last 30 years. Therefore, from a historical perspective, this work focuses on what policies South Korea has pursued in relation to ICT and digital government implementations. In this process, not only successful cases but also cases of failure are described. Where relevant, it may be more important to learn lessons from failures in other countries.

The second is to provide South Korean cases to officials in charge of ICT and digital government policies in developing countries. Recently, many officials from developing countries have visited South Korea and benchmarked the country's digital government as part of their own national development strategies. Thus, South Korea's success stories, success factors and official development assistance (ODA) are included. In this way, practical examples are provided to help developing countries establish strategies and plans for national informatization.

Through this book, I hope that various countries will be able to utilize ICT to achieve government innovation, strengthen national competitiveness, increase administrative productivity, efficiency and transparency through digital government and further realize democracy.

## Case study: OECD digital government's 12 principles

The OECD's following 12 principles support the development and implementation of digital government strategies that bring governments closer to citizens and businesses.

1. openness, transparency and inclusiveness
2. engagement and participation in policy making and service delivery
3. creation of a data-driven culture in the public sector
4. protection of privacy and ensuring security
5. leadership and political commitment
6. coherent use of digital technology across policy areas
7. effective organization and governance frameworks to coordinate
8. strengthened international cooperation among governments
9. development of clear business cases
10. reinforcement of ICT project management capabilities
11. procurement of digital technologies
12. establishment of a legal and regulatory framework

(www.oecd.org/governance/digital-government/toolkit/12principles/)

## Lessons learned: five major areas for leaders to consider for the digital transformation of government

According to a report on digital transformation published by Deloitte University Press in 2015, in order to promote digital transformation in government, government leaders should consider the following five areas (Eggers & Bellman, 2015).

The first is strategy. For a successful strategy, leaders must present a clear and coherent digital strategy for the future with regard to the vision of digital strategy. They should also provide a detailed plan for addressing the key elements of digital transformation, including the digital strategy roadmap. Then, by expanding the organization's capabilities, leaders must help foster a culture and build capabilities for digital transition.

The second is a focus on the user. When providing digital government services, policy should be pursued from the perspective of citizens as users, rather than the government as the provider. Specifically, citizens' participation should be ensured and responded to promptly.

The third is culture. It is important to strengthen the innovative and collaborative culture in relation to digital transformation within the government. It should be possible to create a working environment for digital collaborations within an organization. In particular, frontline agencies working directly with citizens should ensure that they work flexibly in the digital environment.

The fourth is workforce skills. Public officials in many government agencies are lacking in skills and competencies in relation to digital transformation. Therefore, various measures should be taken to collect competent talent in relation to

digital skills in the public sector. This includes creating internship and fellowship programmes, experimenting with competitions, crowdsourcing and hiring for short-term assignment-based teams.

The fifth is procurement. Now, in the digital age, the purchasing method of the analogue era is no longer appropriate. Therefore, the purchasing method should be simplified and the modular approach should be utilized. Specifically, the purchasing unit should be subdivided, flexible, open to all processes and standards and purchased through collaboration.

## Notes

1 In July 2013, the city of Detroit in the United States went bankrupt; in 2006, the city of Yubari in Japan went bankrupt. So far, more than 500 cities in America have applied for bankruptcy protection and have undergone regeneration. As such, local governments in developed countries have experience of bankruptcy. However, for many developing countries, there is no possibility of bankruptcy.

2 In 2000, with the support of the South Korean government, the author conducted a research project on the enactment of the e-Government Act and proposed the draft of the Act. During this process, I engaged in numerous rounds of discussions and debates with South Korean officials at that time, who identified e-government as a level of introducing information and communication technology to the public sector. Therefore, the public officials thought that the realization of democracy through e-government, which was proposed by the author, was irrelevant information and unrelated to the purpose of e-government implementation. Government officials were opposed to the insertion of the expressions that embodied democratic values in e-government, but the author strongly advocated this idea and enacted the law for e-government purposes.

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# Part I

# The beginning of electronic government

# 2 The origin and background of e-government

## Introduction

Administrative innovation movements that began in the United Kingdom in the 1980s continued in the United States, materializing in the days of the Clinton administration as the "Reinventing Government" movement. This movement, which considered the public to be customers and emphasized customer preference and satisfaction, was led by the Clinton administration's National Performance Review[1] (NPR). The NPR effort is recognized as the first successful government reform in American history. The NPR had many success factors, but the most important difference from previous administrative reforms was its use of information technology.

Electronic government, initiated by the NPR in 1993 during the Clinton administration in the United States, promoted government innovation using information technology as a banner and pursued various changes in the way governments operate in various fields. Importantly, e-government was not just about introducing information technology into government; it was more about pursuing government innovation. E-government in the US was actively promoted for eight years during the Clinton administration, and its policies were maintained even after the regime changed in 2001.

Unlike past reform efforts, the success of this US government innovation was driven by information technology-based administrative innovation, or e-government. Therefore, this chapter will examine the government innovation initiated by the Clinton administration in 1993 by focusing on the NPR and specifically analysing the process and content of this e-government initiative. The beginning and content of this US digital government policy is summarized by the following chapter headings.

- the beginning and content of US government reform: Reinventing Government
- the NPR-led reinvention of government
- the emergence of electronic government
- the meaning of e-government success

## The beginning and content of US government reform: reinventing government

The government reform initiated by the Clinton administration in the United States involved disseminating the Reinventing Government policy, previously centred around local governments, to the federal government. This effort was carried out in pursuit of the concept of an entrepreneurial government popular at the time. The details are as follows.

### *Reinventing government*

The movement to reinvent government began in the 1980s, but was firmly established in 1992 with the publication of Osborne & Gaebler's best-seller *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector* (Osborne & Gaebler, 1992). This book, as the subtitle explains, was about introducing entrepreneurship and management techniques to the public sector. The entrepreneurial government that is emphasized in this book is a government that values four principles: putting the customer first, cutting red tape, empowering employees to get results and cutting back to basics by producing better government for less. The authors regarded citizens as customers and provided ten principles of government innovation through case studies of various local governments, as summarized below from the book's chapter subtitles.

1. steering rather than rowing
2. empowering rather than serving
3. injecting competition into service delivery
4. transforming rule-driven organization
5. funding outcomes, not inputs
6. meeting the needs of the customer, not the bureaucracy
7. earning rather than spending
8. prevention rather than cure
9. from hierarchy to participation and teamwork
10. levering change through the market

The authors argued that the introduction of entrepreneurial government was the way to reinvent government, and since then this logic has rapidly spread to various countries in tandem with the demands for a "small but strong government". Entrepreneurial government was at the time sought as a countermeasure to the prevailing state of government bureaucracy, authoritarianism and fiscal deficits. Accordingly, it has led to a change in the paradigm of administrative service to focus on providing citizen-centred customer satisfaction.

### *Government innovation in the Clinton administration*

In 1993, as soon as it took power, the Clinton government attempted to reform the government based on the Reinventing Government movement. In the

1980s, many Americans were afraid of big government, government insensitive to the demands of the people and that refused to change. Therefore, the pursuit of a relatively small but strong entrepreneurial government was adopted as a method of government innovation. Thus, the Clinton administration's government innovation policy pursued four principles of entrepreneurial government, given below.

*Putting the customer first*

An entrepreneurial government seeks to satisfy customers by seeing them as "customers" rather than "citizens". In addition, entrepreneurial governments value results rather than rules and procedures. Therefore, the government investigates, publicizes and institutionalizes customer satisfaction. Specifically, the "Citizens' Charter", first established in the United Kingdom, was transformed into the "Customer Service Standards" in the United States. As a result, in September 1993, many federal agencies defined target customers and created customer service standards to enhance administrative efficiency.[2]

*Cutting red tape*

The entrepreneurial government seeks to eliminate useless rules, regulations and practices. In today's rapidly changing administrative environment, these rules and regulations force governments to remain as unproductive bureaucracies. Therefore, it is necessary to boldly eliminate the various control devices established based on the distrust of civil servants and citizens and to pursue the common sense government. Entrepreneurial governments have used strategies such as the elimination of regulations, sunset laws that are abolished if not re-approved, review commissions to eliminate unnecessary regulations or activities and zero-based budgets (ZBB). Specifically, they have greatly expanded the discretion and autonomy of public officials in the areas of personnel, budget and purchasing, thereby drastically reducing the time and effort involved in the work process.

*Empowering employees to get results*

The entrepreneurial government enlarges the autonomy of civil servants and pursues the subordination of authority. It also transfers much of its power to consumers, communities and non-governmental organizations. The strategy of enhancing this autonomy is to delegate the discretion in administrative operation to the lowest level. This approach ensures that the various executive functions are organized in separate offices and that the chief executives of these offices have discretion in independent accounting, personnel and financial operations, and are responsible for the provision of administrative services.

This principle was introduced early in countries such as the UK, Australia and New Zealand, but came somewhat later to the United States. Specifically, in 1994, the Government Management Reform Act for decentralized performance

management was passed. The strategy that was pursued along with this was the promotion of performance evaluation and the commendation of innovative officers.[3]

### *Cutting back to basics: producing better government for less*

Strategies for government innovation are largely divided into revenue-seeking strategies and cost-saving strategies. Revenue-seeking strategies can be achieved by increasing usage fees and the principle of paying the beneficiary. In the case of cost reduction, strategies can aim to eliminate duplication and waste. The integration and abolition of ministries is one of the oldest methods of cost reduction. The resulting reduction of manpower represents the largest share of such cost reduction.

In 1993, Australia and New Zealand drastically reduced manpower through the integration and abolition of ministries. The United States also substantially reduced its number of civil servants through the Federal Workforce Restructuring Act in 1994. Specifically, during the period from 1993 to 2000, 13 of 14 ministries were reduced in size. The ensuing abolition of 426,000 civil servant jobs and around 250 policy programmes and related agencies led to the formation of the smallest government since the Eisenhower administration in the 1950s.

Government innovation during the Clinton years was led by the National Performance Review, and e-government was the most important tool in the process of government innovation. Therefore, we next examine the activities of the National Performance Review.

## The NPR-led reinvention of government

In the United States, the beginning of digital government and e-government policy coincided with the activities of the NPR. Previous NPR activities on government innovation are described below.

### *The beginning of the National Performance Review*

According to The CyberCemetery,[4] the beginning of the NPR can be summarized as follows.

> The National Performance Review is the Clinton-Gore Administration's initiative to reform the way the federal government works. Its goal is to create a government that "works better and costs less". Begun in the early days of the Administration, and with Vice President Al Gore at its helm, the Review has operated the duration of the Administration through several phases of initiatives.
>
> The National Performance Review was created by President Bill Clinton on March 3, 1993. He appointed Vice President Al Gore as its leader. The President gave the review a 6-month deadline – report results to him by

September 7, 1993. The review was largely staffed by about 250 career civil servants, and a few state and local government employees and consultants.

Vice President Gore visited a series of agencies during the next few months to learn first-hand the problems facing these agencies. He also hosted a June 1993 "Reinventing Government Summit" in Philadelphia of corporate executives, government leaders, and consultants who were leaders in organizational change.

The President had also directed agencies to create their own internal reinvention teams that worked with the corresponding NPR teams (many of which, such as the NPR, continued on beyond the end of the initial review to assist in implementing the resulting recommendations). The NPR worked closely with these teams in developing the recommendations presented to the Vice President.

The final report, Creating a Government That Works Better and Costs Less, was presented to President Clinton in a ceremony on the White House lawn on September 7, 1993. Immediately after the White House event, the President and Vice President made a tour of the country to promote the report and to issue Presidential directives to begin implementing its recommendations. By December 1993, the President had signed 16 directives implementing specific recommendations, including cutting the work force by 252,000 positions, cutting internal regulations in half, and requiring agencies to set customer service standards.

(https://govinfo.library.unt.edu/npr/library/papers/bkgrd/brief.html)

### *NPR vision and strategy*

The National Performance Review's vision and strategy are summarized as follows.

#### *Vision and mission*

In July 1993, when the NPR was launched, its vision was "America @ Our Best" – "In time for the 21st century, reinvent government to work better, cost less, and get results Americans care about"[5].

This should be contextually understood in accordance with the US economy at that time. The United States faced a major threat from the economic growth of Japan in the 1980s, when the Japanese economy seemed to overtake that of the United States. Thus, the Clinton administration, in power from the early 1990s, chose government reform as one of the ways in which the US could regain hegemony of the global economy. Such government reform was not merely aimed towards the improvement of government productivity, but was used to improve national competitiveness and advance the US's position as the world's leading economic superpower.

Accordingly, the United States tried to improve national competitiveness and reorganize the global economic order by installing the Information Superhighway

(i.e., high-speed telecommunication networks) and adopting e-government (IITF, 1993). As such, it was the goal of the United States to develop the global information infrastructure so that it could lead the global economy in the knowledge-based information society.

*Principles and strategies*

As we saw above, the NPR was built upon four principles (NPR, 1993a): cutting red tape, putting customers first, empowering employees to get results and cutting back to basics.

In order to fulfill these visions and goals, the following strategies were adopted to promote government reform.

- cutting unnecessary spending
- serving its customers
- empowering its employees
- helping communities solve their own problems
- fostering excellence
- creating a clear sense of mission
- steering more, rowing less
- delegating authority and responsibility
- replacing regulations with incentives
- developing budgets based on outcomes
- exposing federal operations to competition
- searching for market, not administrative, solutions
- measuring success by customer satisfaction

(https://govinfo.library.unt.edu/npr/library/vision.html)

***NPR accomplishments (1993–2001)***

As is well known, the NPR was the most successful and longest-lasting government reform effort in the history of the US federal government. While previous government reforms had been innovation efforts that invited prominent professors of famous universities, the NPR involved a real organization consisting of 250 selected and dedicated public servants. After its launch in 1993, the NPR started by recommending more than 1,200 specific changes to make government work better, cost less and get results Americans cared about. The NPR began to make improvements based on these recommendations, engaging in more than two-thirds of the changes in Clinton's first term.

Then, in the second Clinton term, which began in 1997, the NPR began to focus on transforming the culture in major agencies that had the most contact with the public to be more results-oriented, performance-based and customer-focused (NPR, 1997). The NPR used information technology and new approaches in employees' roles as key levers. The NPR also created a network of results-oriented partnerships across agency lines with states and local governments, and

changed the relations between regulatory agencies and businesses. Its major accomplishments are listed below.

***Ending the Era of Big Government***

Reduced the size of federal civilian workforce by 426,200 positions between January 1993 and September 2000. Thirteen of 14 departments reduced in size; Justice grew because of Administration's fight against crime and drugs. The government workforce was for the first time the smallest it had been since the Eisenhower Administration.

***Changing Government to be More Results- and Performance-Oriented***

Made the government more results-oriented & developed the first annual performance reports required under the Results Act, created networks and cross-agency partnerships for results, and advocated the use of balanced measures to drive individual performance incentives.

***Serving People Better***

By 1997, about 570 federal organizations had committed to more than 4,000 customer service standards, embedding a recognition that government does in fact have customers. By 2000, 80 per cent of managers saw service goals aimed at meeting customer expectations, up from 36 per cent in 1992.

***Changing the Way Government Works with Businesses***

In 1996, agencies eliminated more than 16,000 pages of unnecessary federal regulations affecting businesses.

***Changing the Way Government Works with Communities***

Used partnerships and networks to achieve results and streamline services via five initiatives.

***Transforming Access to Government through Technology***

Worked to help create FirstGov: a one-stop website (www.firstgov.gov) for government information, transactions, program results, and e-mail feedback to public officials, with connections to 27 million web pages and about 1,000 forms and services.

***Making the Federal Government a Better Place to Work***

Recognized frontline employees for their reinvention innovations. More than 68,000 employees on 1,378 teams received Vice President Gore's Hammer Award. Together, they not only improved government operations but also saved or put to better use more than $53 billion.

(https://govinfo.library.unt.edu/npr/whoweare/appendixf.html)

## The emergence of electronic government

Among the many accomplishments of the Clinton government reform discussed above, electronic government has been recognized as the success story with the greatest impact to date. During the Clinton administration, the emergence of e-government and its specific initiatives and achievements were as follows.

### *The origin of electronic government*

The term e-government first appeared in September 1993,[6] in *Reengineering Through Information Technology*, a report published by the NPR in the United States (NPR, 1993b). While the word e-government can't be found in the glossary of this report, in the preceding executive summary, e-government is explained as follows.

> The government must not apply information technology haphazardly or sporadically. It also should not simply automate existing practices. Instead, public officials should view information technology as the essential infrastructure for government of the 21st Century, a modernized "**electronic government**" to give citizens broader, more timely access to information and services through efficient, customer- responsive processes.
>
> Implement Electronic Government: **Electronic government** extends the idea first seen in electronic banking. Just as ATMs, plastic access cards, and nationwide networks have made banking more convenient, electronic government will make communicating with government easier and faster. Obviously, as in electronic banking, privacy and security issues must be addressed here as well.
>
> (NPR, 1993b; my emphasis)

As such, the term e-government began with the concept of "electronic banking" developed by banks to provide convenient services to their customers. The government defined the concept of e-government in order to provide more convenient government services to the government's customers. Thus, within the US e-government framework, the government understood its citizens as customers.

In other words, the government promoted service of the people as the basic reason for its existence and created the concept of e-government as a way to provide unprecedented advanced government services to its people. Therefore, the concept of e-government in the United States was not limited to simple outsourcing activities such as cost reduction or reduction of government scale, but was extended to the government reform movement aimed at raising the satisfaction of the people and pursuing the higher goal of deepening democracy.

### *e-government initiatives (1993–1997)*

In this way, the concept of e-government in the United States was introduced to enhance the rationality of the decision making process using ICT and to

implement a citizen-oriented government. Here, citizen-oriented government refers to a government that citizens have easy access to, one that provides reliable information in a timely manner and investigates and responds to the needs of the people in advance.

Therefore, based on the Paperwork Reduction Act (PRA), the basic policy of the US e-government initiatives in their early stages was to achieve integrated management of government information scattered across the ministries, to improve the provision of nationwide services through efficient utilization of information resources, and the effective and innovative application of information technology within the government.

In 1993, the NPR presented the following 13 initiatives as a concrete way for the federal government to implement e-government (NPR, 1993b).

- Strengthen Leadership in Information Technology
  - IT01: Provide Clear, Strong Leadership to Integrate Information Technology into the Business of Government
- Implement Electronic Government
  - IT02: Implement Nationwide, Integrated Electronic Benefit Transfer
  - IT03: Develop Integrated Electronic Access to Government Information and Services
  - IT04: Establish a National Law Enforcement/Public Safety Network
  - IT05: Provide Intergovernmental Tax Filing, Reporting, and Payments Processing
  - IT06: Establish an International Trade Data System
  - IT07: Create a National Environmental Data Index
  - IT08: Plan, Demonstrate, and Provide Government wide Electronic Mail
- Establish Support Mechanisms for Electronic Government
  - IT09: Improve Government's Information Infrastructure
  - IT10: Develop Systems and Mechanisms to Ensure Privacy and Security
  - IT11: Improve Methods of Information Technology Acquisition
  - IT12: Provide Incentives for Innovation
  - IT13: Provide Training and Technical Assistance in Information Technology to Federal Employees

These 13 action plans consisted of 47 specific action items and were continuously implemented from 1993 to 1997. The NPR reported that 47 items in *Access America*, published in 1997, were 62 per cent complete and 38 per cent in progress by early 1997 (NPR, 1997). Among the 13 e-government action plans of the first Clinton administration, IT01, IT02 and IT03 are briefly described below.

### *IT01: provide clear, strong leadership to integrate information technology into the business of government*

The content of IT01 concerns how to secure leadership in US government reform. What is more important in government reform is not information technology per

se, but leadership that is capable of its implementation. Nowadays, this is referred to as ICT governance. To this end, the Clinton administration embodied the NPR vision and upheld the use of IT as a national goal.

Specifically, the NPR established a plan for the effective use of information technology throughout the government. By January 1994, the Information Infrastructure Task Force (IITF; 1993) expanded its work to include a Government Information Technology Services (GITS) Working Group. At a minimum, the working group was composed of representatives from the Office of Management and Budget (OMB) and agencies directly affected by the recommendations. It also coordinated and oversaw implementations of information technology plans. Specifically, it was ensured that OMB staff members had adequate expertise to exercise leadership in federal information and IT activities.

### *IT02: implement nationwide, integrated electronic benefit transfer*

Perhaps the greatest achievement in the early days of US e-government was the electronic benefit transfer (EBT) project. EBT utilizes automated financial transaction and card access technologies to electronically transmit benefits from federal and state governments to beneficiaries that had previously received paper vouchers. This demonstrated the effectiveness and influence of e-government for many American citizens and policy makers.

The nationwide EBT system used direct deposit of benefits and plastic access cards to replace food stamp coupons, AFDC checks, WIC vouchers, Medicaid authorization cards, state general assistance checks, housing assistance checks etc. This approach dramatically improved recipient services, combatted fraud and abuse and saved millions in yearly operating costs for federal and state governments.

The expected effect of integrated EBT was largest in the field of food stamps. In the early 1990s, the existing Food Stamp Program (FSP) of the US Department of Agriculture, jointly conducted by the federal and state governments, cost $25 billion per year to provide benefits to more than 27 million people in 11 million households (OTA, 1993). However, due to paper processing, the already complex task was further complicated through various agencies and stages. To this end, 2.5 billion paper coupons and more than 375 million tickets were printed on paper each year. Changing the FSP to an EBT system had a huge effect (see the case study below).

### *IT03: develop integrated electronic access to government information and services*

At this time, government information was accessible via telephone, email or at kiosks. Therefore, a basis for electronic access to government information had to be established. Access to government was considered a right of a US citizen. Existing technology made possible the integrated electronic access to government information and services. The use of a single nationwide 800 telephone number simplified access to government agencies. Electronic government kiosks

that used technology similar to that of ATMs provided "one-stop shopping" for both government information and services. Personal computers were also used to access electronic bulletin board systems, databases and agency directory services.

Specifically, the Government Information Locator Service (GILS) system was established. GILS was an important part of the national information infrastructure, and identified public information resources throughout the federal government, described the information available in those resources and provided assistance in obtaining the information. It also served as a tool to improve agency electronic records management practices. This "virtual card catalogue" improved public access to federal information. It also provided the potential to help government organizations better comply with existing law and policy requiring the inventorying of information systems and information dissemination products and to improve management of information resources. This led to the establishment of FirstGov.gov, the government representative portal, in the second term of Clinton's reign.

### *e-government initiatives (1997–2001)*

In February 1997, the NPR announced a new plan for the twenty-first century called *Access America*. This report presented the content and progress of government reform and information technology-based e-government initiatives undertaken by the Clinton government over the previous four years, what the president should do and the president's commitment to accomplish his mission.

In the introduction to this report, Vice President Al Gore, who led the NPR at the time, wrote:

> The idea of reengineering through technology is critical. We didn't want to automate the old, worn processes of government. Information technology (IT) was and is the great enabler for reinvention. It allows us to rethink, in fundamental ways, how people work and how we serve customers …
>
> Taken together, the recommendations here paint a picture of the kind of government we should have as we begin the next century. It will be a government where all Americans have the opportunity to get services electronically and where, aided by technology, the productivity of government operations will be soaring.
>
> (Al Gore, Introduction to *Access America*, NPR, 1997.)

As such, the Clinton administration used e-government as the most powerful means of reinventing government and pursued government reform using information technology. Specifically, the following 18 initiatives were embodied and promoted until 2001.

- ELECTRONIC GOVERNMENT: "SERVING THE PUBLIC ON ITS TERMS"
  A01: Improve The Public's Access To Government Services

A02: Implement Nationwide, Integrated Electronic Benefits Transfer
A03: Provide All Federal Payments Using Electronic Funds Transfer By 1999
A04: Bring Environmental Information To The Public
A05: Build An Electronic Environment, Safety, And Health Assistance Resource For Business
A06: Establish The Intergovernmental Wireless Public Safety Network
A07: Address The Information Technology Needs Of Our Nation's Criminal Justice Community
A08: Provide Simplified Employer Tax Filing And Reporting
A09: Support International Trade With Better Data, Available Faster
A10: Create Electronic Export Assistance Centres
A11: Use Electronic Commerce To Streamline Government Business Processes
A12: Expand The Intergovernmental Information Enterprise
A13: Improve The Sharing Of Information Technology Experience Worldwide

- SUPPORT MECHANISMS: "THE TOOLS TO OPERATE AN ELECTRONIC GOVERNMENT"
  A14: Guarantee Privacy And Security
  A15: Integrate The Government Services Information Infrastructure
  A16: Improve Information Technology Acquisition
  A17: Increase The Productivity Of Federal Employees
  A18: Enhance Information Technology Learning

(NPR, 1997)

Thus, in the second phase of the Clinton administration, e-government focused on improving electronic access to government information and spreading EBT nationwide. Furthermore, the Clinton government paid considerable attention to privacy and security.

### *The results of electronic government initiatives: electronic access to government information*

According to a press release prepared by the NPR in January 2001, the results of e-government projects conducted to improve electronic access to government information can be summarized as follows.

> NPR worked with agencies, the Chief Information Officers Council, and the Council for Excellence in Government to implement the President's December 1999 directive to give all Americans greater access to their government by expanding the use of e-Gov. Here are the results:
>
> One-stop Government Information
> Federal Government Forms On-line
> E-mail Access to Public Officials

Identifying Best Practices
Making Services Available through Kiosks
Building an e-government Infrastructure
(https://govinfo.library.unt.edu/npr/initiati/it/egovresults.html)

## The meaning of e-government success

### *Meaning and implications of NPR success*

The Clinton government's NPR-led Reinventing Government movement is considered the first successful government reform in US history. In the first term of the Clinton administration, the NPR promoted "a government that costs less and works better" and pursued two values: cost reduction and increased efficiency. Entering the second phase of the Clinton administration, government reform in the United States was redefined to improve government performance (getting results Americans care about) towards recovering trust in the government. In addition, the name of the National Performance Review was changed to the "National Partnership for Reinventing Government", which went under the slogan "America @ Its Best" to create a government fit for the information age.

Particularly in 1997–1998, during the first phase of Clinton's second term, the NPR added a new goal of e-government implementation using and diffusing newly developed IT. The result was a dramatic breakthrough in administrative services and information delivery by building portal sites such as FirstGov.gov and Recreation.gov and the provision of a variety of online administrative services, including EBT.[7]

Thus, the government reforms of the Clinton administration were regarded as successful reforms in that they were designed to increase efficiency, enhance government capacity and increase service provided to the people of the nation. The executives who led Clinton's government innovation suggested that its success factors were having a clear vision, a clear strategy, strong leadership, the commitment of 250 dedicated public officials and the utilization of information technology (Kamensky, 1996).

The Clinton government overcame the economic crisis of the early 1990s by building high-speed national information infrastructures, fostering an active information industry and introducing IT throughout the country, which resulted in the longest boom period in US history. As a result of this economic boom and improved government services, President Clinton was recorded as the only president in US history with a higher approval rating (66 per cent) at retirement than at his inauguration (58 per cent).

### *Meaning and implications of e-government success*

What were the factors that allowed the Clinton administration to successfully reinvent the government? Several success factors have been suggested, but the

most important is the use of information technology. Before the time of the Clinton administration, more than a dozen administrative reforms in the United States had failed. In the 1900s, there had been more than ten administrative reforms of the US federal government, ranging from the Keep Commission (1905–1909) to the Grace Commission (1982–1984). However, most of these reforms had been carried out as piecemeal reforms for improving administrative efficiency, such as organizational restructuring within the administration and improvement of office management methods, and their effects were limited because they were not accompanied by the utilization of information technology.

However, the Clinton government, which was launched in 1993, pursued innovation that utilized IT and coincided with the construction of the national information infrastructure and the development of the internet. Clinton's government-led IT innovation initiative, the first e-government initiative that centred around the NPR project, helped the United States become a global IT leader in the 1990s. Specifically, the improved efficiency of the overall business promotion method in the government using IT and the convenient online administration service and portal construction contributed to the improvement of the national competitiveness of the United States and laid the cornerstone of e-government development in the 2000s (Ahn & Bretschneider, 2011).

This was due to the fact that, unlike in the past, the Clinton administration was able to utilize and take advantage of the necessary technology developed during the information technology era. In addition, by establishing an electronic information provision system in order to efficiently deliver administrative information and services, the government was able to provide one-stop and non-stop administration services. The Clinton government established and operated an e-government service system that utilized information and communication technology to provide administrative services to citizens in an efficient manner and enhanced productivity within the government.

This is reflected in the implementation and utilization of a nationwide integrated electronic benefit transfer system in various administrative tasks ranging from tax returns to government subsidies. In early 1994, 40 per cent of food stamps were provided through EBT, resulting in cost savings of $12 billion. By 2002, the government completed the implementation to achieve a 100-per cent EBT coverage rate. Thus, the success of US e-government, regardless of the regime change after the Clinton administration, ensured the sustainability of the policy and continued into the Bush administration.

## Case study: the Food Stamp Program in the United States using electronic benefit transfer (EBT)

The Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, provides food-purchasing assistance for low- and no-income people living in the United States. It is a federal aid programme, administered by the United States Department of Agriculture, under the Food

and Nutrition Service (FNS), though benefits are distributed by each US state's Division of Social Services or Children and Family Services.

Food stamp programmes have a very long history, with the first food stamp programme having begun in the late 1930s. The Food Stamp Act of 1964 appropriated $75 million to 350,000 individuals in 40 counties and three cities. Since then, the number of participants has increased rapidly; participation topped 1 million in March 1966, 10 million in February 1971, and 15 million in October 1974. In December 1979, participation surpassed 20 million. In March 1994, participation hit a new high of 28 million.

The mid-1990s were a period of welfare reform as part of the NPR. The 1996 welfare reform made several changes to the programme, requiring states to implement electronic benefit transfer (EBT) before October 1, 2002. In the late 1990s, the Food Stamp Program was revamped, with some states phasing out actual stamps in favour of a specialized debit card system known as EBT, provided by private contractors. Many states merged the use of the EBT card for other public welfare programmes as well, such as cash assistance. The move was designed to save the government money by not printing the coupons, making benefits available immediately instead of requiring the recipient to wait for mailing or picking up the booklets in person, and reducing theft and diversion.

The food stamps that were once provided in paper underwent a major change with the use of EBT.[8] Paper vouchers had not properly functioned as social welfare delivery systems. This was because food stamps that were provided to the children of low-income families were frequently used to purchase drugs and alcohol. These problems were solved at once, with the introduction of the EBT system. The use of cards under the EBT system leaves an audit trail of every transaction, making it impossible to buy alcohol and drugs with the cards. Furthermore, EBT helped members the low-income class recover their pride. The past food paper vouchers had the problem of revealing the consumers' identity at the time of purchase at the retail store. However, EBT cards were welcomed by the users because they were less likely to be identified as low-income household members. In short, the proliferation of EBT and the achievements in the social security delivery system have contributed to the success of e-government in the United States.

## Lessons learned: the importance of leadership in the NPR case

The greatest lesson learned from government innovation and e-government success during the Clinton administration in the United States has been leadership. In many countries, the introduction and utilization of ICT was considered to be the most important factor for implementing e-government or establishing a national digital governance strategy. However, the lesson that can be gained from the success stories of the United States is that government reform requires strong leadership in order to achieve administrative innovation in the public sector using ICT.

In fact, in 1993, President Clinton convened high-level officials of the US federal government at the White House to announce that while he was responsible for economic, diplomatic, security and security issues, environmental issues and informatization were delegated to Vice President Al Gore. Furthermore, since the appointment of Al Gore as the head of the NPR, he had led the IT-based electronic government reforms of the United States throughout the eight years of the Clinton administration. As a result, the e-government initiatives and government reforms were carried out with strong leadership and persistence, as the president had delegated authority to a vice president who exercised full authority.

As such, we can conclude that the implementation of e-government can only succeed if the top officials of the national government and departments are interested and show their commitment; this is more important than merely introducing the latest information and communication technologies. Therefore, at the national level, the most important success factor for e-government and digital government strategies is leadership. However, since all premiers are politicians and not necessarily technicians, it may be difficult to expect a president or prime minister to have complete understanding of and insight into information and communication technologies. Therefore, while it is important for leadership to understand or recognize the importance of information and communication technologies, it may be more efficient to appoint a national chief information officer and delegate authority to the experts.

## Notes

1 The NPR began in 1993 under the name National Performance Review and led the Clinton administration's Reinventing Government movement, transforming into the National Partnership for Reinventing Government in 1998 and leading government reform for the longest time in US history until early 2001.
2 On September 7, 1993, President Clinton set the federal government on the path to high-quality customer service by issuing Executive Order 12862, "Setting Customer Service Standards". Through this order, the president set the goal for federal agencies to deliver customer services that equal the best in businesses. The NPR report entitled *Putting Customers First: Standards for Serving the American People*, published in September 1994, presents more than 1,500 customer service standards that represent goals and standards set by more than 100 federal agencies.
3 The Clinton government created the Hammer Award to honour civil servants who contributed to innovation. From 1994 until 2001, more than 1,378 Hammer Awards were presented to teams comprised of federal employees, state and local employees, and citizens who worked to build a better government. Furthermore, approximately 5,000 civil servants received a certificate of recognition.
4 The CyberCemetery is an archive of government websites that have ceased operation (usually websites of defunct government agencies and commissions that have issued a final report). This collection features a variety of topics indicative of the broad nature of government information. In particular, this collection features websites that cover topics supporting the university's curriculum and particular programme strengths. The University of North Texas Libraries and the US Government Printing Office, as part of the Federal Depository Library Program, created a partnership to provide permanent

public access to the web sites and publications of defunct US government agencies and commissions (https://govinfo.library.unt.edu/npr/library/papers/bkgrd/brief.html).

5 The NPR's "Our Vision for the Future: America @ Our Best" can be found at https://govinfo.library.unt.edu/npr/library/vision2000.html.

6 With regard to the origins of US e-government, many people are confused and suggest that it started in 1997. This is because the initial achievements of US e-government were integrated into *Access America* published by the NPR in 1997. These cases are also found in recent publications (Sánchez-Torres & Miles, 2017). However, US e-government began in 1993 when the NPR was established.

7 Overall, accomplishments like these have been important steps in restoring trust and faith in the government by improving the delivery of services to the public. After a 30-year decline, public trust in the federal government finally increased; when last measured by the University of Michigan in 1998, the public's trust in government had nearly doubled within a four-year period to 40 per cent. While this cannot be totally attributed to the results of reinvention, the NPR believed reinvention had made an important contribution in raising the public's trust in the government and creating a better workplace for federal employees.

8 The 2008 farm bill renamed the Food Stamp Program to the Supplemental Nutrition Assistance Program (beginning October 2008) and replaced all references to "stamp" or "coupon" in federal law with "card" or "EBT".

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# 3 The e-government development process around the world

## Introduction

Today, with the advent of the smart intelligent information society, many countries around the world share a common awareness that e-government needs to be promoted and consequently various e-government projects are being pursued according to the situation of each country. As e-government is being implemented from various viewpoints, it may look different depending on the specific characteristics of each country and the direction of its implementation policy.

Moreover, government innovation in many advanced countries today is being implemented more and more in the form of digital government policies that are based on information technology. Hence, e-government has become a means of implementing digital government and necessitates the establishment of electronic governance. Therefore, this chapter will focus on the United States, which first introduced the concept of e-government, and the United Kingdom, which ranked first in the UN e-Government Survey in 2016. I will then analyse the process for Australia, a Commonwealth nation, which has long pursued digital government policies. Australia is an advanced country in the digital government sector, ranking second in the world in the 2016 and 2018 UN e-Government Surveys. In addition, I will briefly review Norway, which ranked first in the UN evaluation in 2018, Sweden, which ranked fifth in the UN evaluation in 2018, and Japan and China as examples of e-government in Asia.

Specifically, the strategies and policies of these countries will be analysed in terms of policy contents and ICT governance. Finally, the policies' implications will be derived from the trends of these countries. The contents of this chapter are as follows.

- US digital government policy: process and contents
- UK digital government policy: process and contents
- Australian digital government policy: process and contents
- Digital government policy: processes and contents of various countries

## US digital government policy: process and contents

The e-government of the United States, which was implemented in 1993 by Clinton's Democratic government, continued in 2001 with President Bush's Republican government. In the US it is very rare to inherit the policies of the previous administration after such a regime change, implying that this US government innovation was inherited through effective e-government. The US e-Government Act of 2002 played a big role in this process. The US policy towards digital government, institutionalized by the e-Government Act of 2002, has been continuously pursued by the Obama and Trump governments as well. A brief summary follows.

### *Digital government strategy of the Bush administration (2001–2008)*

The Bush administration, which took office in 2001, reversed most of the policies of the previous Clinton administration. Especially in the field of foreign policy, the degree of change was substantial. The Bush administration's policy approach could be called "ABC: anything but Clinton", in that it rejected all previous foreign policy positions. However, the Bush administration faithfully followed the Clinton administration in the e-government sector. This means that e-government became a major means of government innovation at that time in the United States.

As soon as the Bush administration took office, it announced the 2002 budget for *A Blueprint for New Beginnings*, which presented a new national management vision for the next decade (OMB, 2001a). According to the report, the government reform of the Bush administration was conducted on the following three principles:

- citizen-centred, not bureaucracy-centred
- results-oriented, not process-oriented
- market-based – actively promoting, not stifling, innovation and competition

#### *The Quicksilver Initiatives*

The Bush administration's e-Government Task Force operated as one of the Quicksilver Initiatives – a term coined by the administration in *The President's Management Agenda* between the years 2001 and 2002 (OMB, 2001b, 2002). President Bush's agenda was characterized by its presentation of 14 different "areas of improvement" in the federal government. The fourth was labelled as "Expanded Electronic Government" and it covered the Bush administration's intended transformation in e-governance. The Quicksilver Initiatives "marked the beginning of the era of full-scale e-government at the federal level" (OMB, 2002).

President Bush presented the Quicksilver Initiatives as a strategy to reach his administration's goal of providing a larger number of services to a greater number of people at lower cost via electronic means. This process of transformation sought to shift the attention of government regarding information technology from providing services within and among agencies to providing services to the public. This was making "networks rather than agencies become primary" in relation to public services.

As a first step, the Clinton administration's concept of e-government was adopted by President Bush's government. It recreated, developed and implemented the existing FirstGov initiatives along with a group of 24 other projects that constituted the now so-called Quicksilver Initiatives (GAO, 2002). The following is a selection of the 25 Quicksilver Initiatives and their purposes.

***Government to Citizen***

1. USA Service: Allow citizens to personalize their governmental services under secured environments
2. EZ Tax Filing: Electronic filling of tax returns
3. Online Access for Loans: Finding loans for education
4. Recreation One Stop: Access to information regarding national and state parks
5. Eligibility Assistance Online: Verifying eligibility for programs funded by the federal government

***Government to Business*** (omitted below)
***Government to Government*** (omitted below)
***Internal Effectiveness/Efficiency*** (omitted below)

***Crosscutting***

1. E-Authentication: Governmental organizations are permitted to verify the identity of users of government websites.

(GAO, 2002)

Thus, the Bush administration actively promoted the early implementation of e-government in order to further promote public-sector reform beyond the Clinton administration. These efforts include establishing a portal site (FirstGov.gov) to provide government services online, establishing an e-Government Fund, establishing and operating an e-Government Task Force (from July 2001) and enacting the e-Government Act of 2002. The Bush administration's e-Government Task Force worked closely with the Office of Management and Budget (OMB) and the President's Management Council and identified e-government projects that could deliver significant productivity and performance gains across government. The Task Force also identified the systematic barriers that blocked the deployment of e-government advances. The goals of the e-government initiatives in the Bush administration were set as follows.

- Create easy-to-find single points of access to government services for individuals.
- Reduce the reporting burden on businesses – businesses should not have to file the same information over and over because government fails to reuse the data appropriately or fails to take advantage of commercial electronic transaction protocols.
- Share information more quickly and conveniently between the federal and state, local, and tribal governments. We must also do a better job of collaborating with foreign governments and institutions.
- Automate internal processes to reduce costs internally, within the federal government, by disseminating best practices across agencies.

(OMB, 2001b)

*The US e-Government Act (2002)*

The US e-Government Act, enacted in 2002, was the second e-government law in the world following the e-Government Act of South Korea, enacted in 2001. The purpose of the US e-Government Act of 2002 is summarized in the Act itself as follows.

- To provide effective leadership of Federal Government efforts to develop and promote electronic Government services and processes by establishing an Administrator of a new Office of Electronic Government within the Office of Management and Budget.
- To promote use of the Internet and other information technologies to provide increased opportunities for citizen participation in Government.
- To promote inter-agency collaboration in providing electronic Government services, where this collaboration would improve the service to citizens by integrating related functions, and in the use of internal electronic Government processes, where this collaboration would improve the efficiency and effectiveness of the processes.
- To improve the ability of the Government to achieve agency missions and program performance goals.
- To promote the use of the Internet and emerging technologies within and across Government agencies to provide citizen-centric Government information and services.
- To reduce costs and burdens for businesses and other Government entities.
- To promote better informed decision making by policy makers.
- To promote access to high quality Government information and services across multiple channels.
- To make the Federal Government more transparent and accountable.
- To transform agency operations by utilizing, where appropriate, best practices from public and private sector organizations.
- To provide enhanced access to Government information and services in a manner consistent with laws regarding protection of personal privacy,

> national security, records retention, access for persons with disabilities, and other relevant laws.

The main contents of the Act are as follows. First, it begins with the definition of e-government.

> **3601. Definitions**
>
> **Electronic Government** means the use by the Government of web-based Internet applications and other information technologies, combined with processes that implement these technologies, to—"(A) enhance the access to and delivery of Government information and services to the public, other agencies, and other Government entities"; or "(B) bring about improvements in Government operations that may include effectiveness, efficiency, service quality, or transformation" …

The next item, Section 3602, concerns the establishment of the e-Government Office. The US e-Government Act prescribes the establishment of an e-Government office within the OMB. Subsection 3602 (d) outlines the existing information-related laws, and Subsection 3602 (f) defines the role of the director of e-government.

In Section 3603, the CIO Council is established to co-ordinate the establishment of the Secretariat. In particular, the director of the e-Government Office leads the council and broadly defines responsibilities for the CIO Council and the OMB to work together.

In Section 3604, e-government funds are established to support multi-agency e-government projects. The management of the funds is handled by the General Services Administration (GSA), but the director of the e-Government Office is responsible for the whole process from the examination of the proposal to the execution. The fund amounted to $45,000,000 in Financial Year (FY) 2003, $50,000,000 in FY 2004, $100,000,000 in FY 2005 and $150,000,000 in FY 2006. Thus, the US government supported the implementation of e-government by allocating $345 million in funds for four years after the enactment.

### *Open Government strategy of the Obama administration (2009–2016)*

President Obama, who took office amidst the global financial crisis in January 2009, recognized US economic growth and national development as the top priority of the government. He also emphasized solid national innovation and economic growth. President Obama announced "A Strategy for American Innovation" in 2009, convinced that national innovation driven by creative activities of people and corporations could create competitive jobs and sustain economic growth. Therefore, he emphasized "Open Innovation" as a strategy

for government innovation, and the related e-government initiatives can be summarized as part of an "Open Government" policy for the innovation of the state administration system.

*Open Government*

On his first day in office, President Obama signed the Memorandum on Transparency and Open Government, ushering in a new era of open and accountable government meant to bridge the gap between the American people and their government.

- The Administration is reducing the influence of special interests with ethics rules that prevent lobbyists from coming to work in government or sitting on its advisory boards.
- The Administration is tracking how government uses the money with which the people have entrusted it with easy-to-understand websites like recovery.gov, USASpending.gov, IT.USASpending.gov, and ForeignAssistance.gov.
- The Administration is empowering the public – through greater openness and new technologies – to influence the decisions that affect their lives.

(https://obamawhitehouse.archives.gov/open/about)

Shortly after his inauguration, on January 21, 2009, Obama said the following in his first memorandum for the heads of executive departments and agencies.

> My Administration is committed to creating an unprecedented level of openness in Government. We will work together to ensure the public trust and establish a system of transparency, public participation, and collaboration. Openness will strengthen our democracy and promote efficiency and effectiveness in Government …
>
> (https://obamawhitehouse.archives.gov/the-press-office/transparency-and-open-government)

On December 8, 2009, President Barack Obama issued the Open Government Directive, articulating an initiative to make the federal government more transparent, efficient and accessible. This unprecedented Directive required federal agencies to take immediate, specific steps to achieve key milestones in transparency, participation and collaboration. The Directive spelled out specific projects and important shifts in governance so as to implement fundamental improvements. Additionally, the Directive required that all agencies post at least three high-value data sets online and register them on Data.gov within 45 days.

The Obama administration reorganized government in accordance with the following three core values.

> **Transparency**: Government should provide citizens with information about what their government is doing so that government can be held accountable.
>
> **Participation**: Government should actively solicit expertise from outside Washington so that it makes policies with the benefit of the best information.
>
> **Collaboration**: Government officials should work together with one another and with citizens as part of doing their job of solving national problems.
>
> (https://obamawhitehouse.archives.gov/open/documents/open-government-directive)

In 2011, the Obama administration expanded its support for Open Government efforts when it launched the Open Government Partnership at a UN General Assembly meeting with seven other heads of state. US efforts with the Open Government Partnership are set forth in biennial Open Government National Action Plans that detail specific and measurable Open Government commitments.

*Major Open Government activities: the Obama administration's commitment to Open Government*

The Obama administration did not promote Open Government simply as an abstract proposition. Instead, it took specific steps to make the federal government more transparent, participatory and collaborative, as follows (https://obamawhitehouse.archives.gov/sites/default/files/opengov_report.pdf).

**Freedom of Information**. For example, on President Obama's first full day in office, he issued a Memorandum to all executive departments and agencies concerning the Freedom of Information Act (FOIA).

**Open Government Directive and agency plans**. The President's FOIA Memorandum was accompanied by a companion Memorandum to the heads of executive departments and agencies on the subject of "Transparency and Open Government", issued on the same day.

**Data.gov and data-driven innovation**. As agencies developed their Open Government plans, they made large amounts of information available to the public, in part through a centralized government platform, Data.gov.

**Spending transparency**. The administration's openness efforts also placed great emphasis on the disclosure of federal spending decisions. Here, transparency became a tool to protect taxpayer dollars.

**Sensitive government information**. The administration's Open Government efforts extend to greater disclosure of other types of government information too. President Obama's Executive

> Order 13526 imposed limits on the classification of government documents, and initiated the declassification of voluminous government information that should no longer be kept from the public.

### *Digital strategy of the Trump government (2017–present)*

In January 2017, with the inauguration of President Trump, the Democratic government was replaced by a new Republican government. However, there has since been no major change in e-government. While President Trump has shown strong opposition to the policies of the former administration, exemplified by the immediate signing of the Executive Order to abolish Obamacare on the first day of his inauguration, he maintained the previous government's e-government policies. Based on the e-Government Act, the United States has continued to pursue e-government policies through the e-Government Office at the OMB. The Trump government, too, has maintained the Obama government's digital government policy trends.

A typical example is cybersecurity. With the launch of the Trump government in 2017, cybersecurity issues were first discussed, but in April 2017 President Trump decided to extend President Obama's Executive Order 13694 for one year. The Executive Order allowed the government to impose sanctions against people or organizations that caused serious cyberattacks and cybercrimes against US interests. Executive Order 13694 was due to expire on April 2014. However, President Trump sent a letter to Congress saying he would continue with the order. Then, in May 2017, President Trump signed a new Executive Order on cybersecurity, which is not much different from Executive Order 13694 of the previous administration. The new Executive Order was divided into three substantive sections covering the cybersecurity of federal networks, the cybersecurity of critical infrastructure and cybersecurity for the nation.

With regard to information policy and e-government promoted by the Trump administration, one big change was the launch of the American Technology Council and the use of artificial intelligence in public services.

#### *Launch of the American Technology Council*

In March 2017, President Trump signed an Executive Order to establish the American Technology Council (ATC), launching it in May. The ATC is an organization that promotes digital service innovation and modernization of the federal government. According to the Executive Order, the purpose of establishing the ATC is as follows.

> Section 1. Policy. It is the policy of the United States to promote the secure, efficient, and economical use of information technology to achieve its missions. Americans deserve better digital services from their Government.

> To effectuate this policy, the Federal Government must transform and modernize its information technology and how it uses and delivers digital services.
>
> (www.whitehouse.gov/presidential-actions/presidential-executive-order-establishment-american-technology-council/)

To achieve these digital strategic goals, the United States has created a new digital growth fund to build the digital skills, capabilities and leadership needed in the public sector and to address the supply shortage of digital technology. The ATC consists of 19 members, including the president as the chairman.

The principal functions of the ATC shall be to:

- coordinate the vision, strategy and direction for the Federal Government's use of information technology and the delivery of services through information technology;
- coordinate advice to the President related to policy decisions and processes regarding the Federal Government's use of information technology and the delivery of services through information technology; and
- work to ensure that these decisions and processes are consistent with the policy set forth in section 1 of this order and that the policy is being effectively implemented.

(www.whitehouse.gov/presidential-actions/presidential-executive-order-establishment-american-technology-council/)

In December 2017, ATC released its *Report to the President on Federal IT Modernization* (ATC, 2017). This report is focused on IT modernization efforts to improve the federal government's security posture. Though this covers a significant footprint of modernization needs, the public comment period generated responses from industry that highlighted the importance of providing an overarching IT modernization plan that aligns these efforts with ongoing work to improve citizen-facing services, make better use of mobile technologies, improving security across the federal enterprise and other key efforts.

It essentially functions as a plan that incorporates government stakeholders to identify ways for the government to enhance its cybersecurity posture, modernize the federal IT enterprise and create a more robust partnership between government and industry.

The digital strategy of the Trump administration is focused on the safety and modernization of federal information systems, rather than pursuing administrative innovation using ICT. The Trump government has a plan to raise the information system and information services of the underprivileged public sector to the level of the private sector, and is promoting it mainly through the ACT. In particular, the Trump government said it could save up to $1 trillion over the next ten years through reform of the government's network, which was installed decades ago. Therefore, it can be said that the current government's focus is on budget reduction

through streamlining the operation of information systems rather than making government information more open, as was a major aim in the previous government.

## UK digital government policy: process and contents

The UK is a leading country in every respect in the fields of government innovation, e-government and digital government. However, for many countries around the world, apart from the Commonwealth countries, government innovation and e-government are believed to have their origins in the innovation carried out in the United States. In fact, the Citizen's Charter and digital government, which started in the UK, spread to the US and became the Customer Service Standard and electronic government before spreading worldwide. Since the early 1990s, the UK has been pursuing a variety of information policies as its digital strategy. The following is a brief look at the process of implementing the UK's information policies and digital strategies.

### *Green Paper: "Government Direct" (1996)*

As the term e-government proliferated in the United States, it was hardly used in the UK, which, along with other EU countries, initially used terms such as cyber government, digital government and government online. The UK has also long used the terms electronic service delivery and UK online. The use of information technology as a means of government innovation in the UK was presented in 1996 as the Green Paper "Government Direct: A Prospectus for the Electronic Delivery of Government Services".

In this Green Paper, the UK government mentioned that in delivering the services that the government provides to the general public and businesses that can be called customers, it is possible to expand services by applying advanced information technology, and improve the efficiency of government administration (https://ntouk.files.wordpress.com/2015/06/government-direct.pdf).

### *Modernising Government White Paper (1999–2002)*

In March 1999, the UK government published its "Modernising Government" White Paper in order to achieve the goal of building a "Better Government" that could provide better lives and services for the public and businesses. This White Paper presented three aims and five key commitments as a long-term programme for dramatically improving public services. One of the five key commitments was implementation of the "Information Age Government".

In this paper, a strategy for achieving the goals of the "Information Age Government" was presented as follows.

- a corporate IT strategy for government
- electronic services for citizens and businesses
- partnership

- framework policies across government
- financial transactions between citizens and government
- privacy
- electronic delivery

(https://webarchive.nationalarchives.gov.uk/20131205122601/http://www.archive.official-documents.co.uk/document/cm43/4310/4310-05.htm)

What is particularly noteworthy in this White Paper is the delivery of electronic services. Prime Minister Tony Blair announced in 1997 that, by 2002, 25 per cent of the public's dealings with government should be capable of being carried out electronically. In addition, in the White Paper, the UK government suggested new targets beyond 2002, proposing that 50 per cent of dealings should be capable of electronic delivery by 2005 and 100 per cent by 2008.

### *e-government (2000–2005)*

In April 2000, the UK government launched *e-Government: A Strategic Framework for Public Services in the Information Age* (Cabinet Office, 2000a). This was a kind of action plan to achieve the "Information Age Government" proposed in the "Modernizing Government" White Paper. This report described e-government as follows.

> e-government fulfils the commitment in the Modernising Government White Paper to publish a strategy for Information Age Government. It focuses on better services for citizens and businesses and more effective use of the Government's information resources. Implementing it will create an environment for the transformation of government activities by the application of e-business methods throughout the public sector. The strategy challenges all public sector organisations to innovate, and it challenges the centre of government to provide the common infrastructure which is needed to achieve these goals.
>
> (Cabinet Office, 2000a)

The report also suggested as four principles of e-government implementation:

- building services around citizens' choices
- making government and its services more accessible
- social inclusion
- using information better

This report advanced the target year of electronic service delivery set in the "Modernising Government" White Paper. In other words, in 2005, the government decided to establish e-government sooner by bringing government services online, which had initially been aimed at achieving 100 per cent by 2008. In

addition, by the summer of 2000, a single government portal site was established to provide all central and local government services.[1] It also contained content concerning the resolution of the digital divide (Cabinet Office, 2000b).

### *Connecting the UK: The Digital Strategy (2005–2008)*

In April 2005, *Connecting the UK: The Digital Strategy* was announced (Cabinet Office, 2005a), which had been written and published as one of the national development strategies with the Department of Trade and Industry. The concrete action strategies presented in this report are as follows.

> **Making the UK a world leader in digital excellence**
>
> Action 1: Transform learning with ICT
> Action 2: Set up a "Digital Challenge" for Local Authorities
> Action 3: Make the UK the safest place to use the Internet
> Action 4: Promote the creation of innovative broadband content
>
> **Constructing a robust strategy to achieve our vision**
>
> Action 5: Set out a strategy for transformation of delivery of key public services
> Action 6: Ofcom sets out regulatory strategy
>
> **Tackling social exclusion and bridging the digital divide**
>
> Action 7: Improve accessibility to technology for the digitally excluded and ease of use for the disabled
> Action 8: Review the digital divide in 2008
>
> (Cabinet Office, 2005a)

In November 2005, a report titled *Transformational Government: Enabled by Technology*, aimed at innovation in the government sector using information technology, was published (Cabinet Office, 2005b). The UK government used IT to address three challenges: economic productivity, social justice and public service reform. The vision and specific strategies presented in this report are as follows.

> **Vision**
>
> This strategy's vision is about better using technology to deliver public services and policy outcomes that have an impact on citizens' daily lives: through greater choice and personalisation, delivering better public services, such as health, education and pensions; benefiting communities by reducing burdens on front line staff and giving them the tools to help break cycles of crime and deprivation; and improving the economy through better regulation and leaner government.

**Strategy**

(1) Services enabled by IT must be **designed around the citizen or business**, not the provider, and provided through modern, co-ordinated delivery channels.
(2) Government must **move to a shared services culture** – in the front-office, in the back-office, in information and in infrastructure – and release efficiencies by standardisation, simplification and sharing.
(3) There must be broadening and deepening of government's **professionalism in terms of the planning, delivery, management, skills and governance** of IT enabled change.

(Cabinet Office, 2005b; emphasis in original)

The UK government predicted that there would be more radical changes in the provision of public services by technology after 2011 and that this would lead to new opportunities. To this end, the government strengthened its support for a shared services framework to change the participants in the delivery of public services to citizens and businesses. The plan covered the IT agenda of the public-sector from 2005 to 2010. The main content was to provide a shared service for citizens to feel the informatization directly and to stimulate the industry based on information technology. This strategy has been successful and has become a good precedent for the world.

### *Digital Britain (2009–2012)*

In January 2009, the UK government released *Digital Britain: The Interim Report* on the Digital UK Initiative to address the future direction of the UK economy and promote economic growth. The report aimed to provide broadband services to 100 per cent of UK households by 2012 and presented 22 action plans for the UK's digital transition (Department for Culture, Media & Sport, 2009).

The final *Digital Britain* report was released on June 16, 2009, which outlined the UK government's strategic vision for ensuring that the country is at the leading edge of the global digital economy (Department for Business, Innovation and Skills, 2009). The Digital Economy Act of 2010 was one of the outcomes of this policy. Chapter 8 of this final report describes "The Journey to Digital Government".

### *Government ICT strategy (2010–2012)*

In January 2010, the UK government released the Government ICT Strategy, which presented a strategy for building a smarter, cheaper and greener public-sector ICT infrastructure. This strategy included the advancement of public services through interoperability and data sharing support, as well as the simplification and standardization of ICT across the public sector to citizens and

businesses. The 14 specific goals and actions of Prime Minister Gordon Brown's ICT strategy were presented.

The Strategy suggested the direction of UK informatization by 2020. However, this strategy lost its drive as David Cameron was elected as prime minister in May 2010; Cameron's new Government ICT Strategy was announced in March 2011. This report analysed the failure of the big ICT projects and programmes in the public sector and suggested 30 specific action plans in three areas to be implemented within two years (Cabinet Office, 2011).

Part 1 – Reducing waste and project failure, and stimulating economic growth
Part 2 – Creating a common ICT infrastructure
Part 3 – Using ICT to enable and deliver change

The report also suggested ways to strengthen the UK government's ICT governance. Accordingly, the new ministerial committee (the Public Expenditure Committee (Efficiency and Reform), or PEX (ER)) was created. This organization drove progress by providing a forum for scrutiny and decision making in order to ensure that government ICT is used more effectively to power public-sector reform. In addition, the CIO Delivery Board was newly established. This board, comprising chief information officers (CIOs) from the large delivery departments, was established to sit above the CIO Council and advise PEX (ER) on progress. The Delivery Board took ownership of the delivery and implementation of the ICT Strategy.

In October 2011, the UK government released the *Government ICT Strategy: Strategic Implementation Plan*. This report contains more specific enforcement objectives and practices for the 30 action plans announced in March 2011 (HM Government, 2011).

### *Government Digital Strategy (2012–2017)*

In November 2012, the UK government announced the Government Digital Strategy, a new e-government plan for the Cameron government. The key goal was to build "digital by default" service standards – to provide digital services that those who wanted to could use right away, without excluding people who are unable use digital services. This strategy set out how the government would become digital by default. It fulfilled the commitment the UK government had made in the Civil Service Reform Plan (HM Government, 2012). The Government Digital Strategy suggested 14 actions, categorized under 11 principles.

The key component of the Strategy was for the government to simplify and provide information through a single website (www.gov.uk) and to provide 650 civil affairs services online so that people save time and the government can reduce costs.

### *Government transformation strategy (2017–2020)*

In February 2017, the UK government released the *Government Transformation Strategy 2017 to 2020* (UK Government, 2017). This complements the Government Digital Strategy announced in 2012 and aims to promote government innovation at various levels using ICT by 2020. The UK government evaluated that citizens' service experiences had been considerably enhanced due to public-sector service improvements, including the digitization efforts of the existing government sector. Undoubtedly, there have been significant achievements in digital government.

However, innovation in the public sector itself is still in short supply. Therefore, this strategy focuses on the promotion of the service delivery approach in the public sector and internal innovation in public institutions for the organizations' digital transformation. The main contents of this strategy can be summarized as follows.

**Vision**

To serve the people of the United Kingdom better we want to create a responsive state that can change at pace and at scale. To do this, we need to transform the relationship between citizens and the state – putting more power in the hands of citizens and being more responsive to their needs.

**Major Scope and Objectives**

In order to transform the relationship between the citizen and the state by 2020 the government will pursue the following objectives.

- Business transformation: continue to deliver world-class digital services and transform the way government operates, from front end to back office, in a modern and efficient way
- Grow the right people, skills and culture: develop the right skills and culture among our people and leaders, and bring together policy and delivery to enable services to be delivered in a learning and iterative environment, focused on outcomes for citizens
- Build better tools, processes and governance for civil servants: build better workplace tools and processes to make it easier for public servants to work effectively, including sourcing, governance, workplace IT, businesses cases, human resources processes, common technology across the public sector and better digital tools for civil servants
- Make better use of data: not just for transparency, but to enable transformation across government and the private sector
- Create shared platforms, components and reusable business capabilities: create, operate, iterate and embed good use of shared platforms and reusable business capabilities to speed up transformation – including shared patterns, components and establishing open standards.

(UK Government, 2017)

These details are included in *Digital Government*, one of the seven areas of the UK Digital Strategy that was released in March 2017 (Department for Digital, Culture, Media & Sport, 2017). This Digital Strategy aims to provide UK citizens with the world's best online public services. Hence, the current UK government displays consistency in the digital government sector by establishing a link between its strategy and that of its precursor.

## Australian digital government policy: process and contents

Australia is an advanced country in the digital government sector, ranking second in the world in the 2016 and 2018 UN e-Government Surveys. Australia's digital government policy has a very long history similar to that of the UK. This is summarized below.

Australia's national informatization strategy began in December 1997 with the announcement of "Investing for Growth", which links Australia's economic and social development with the government's information and economic strategy. The strategy suggested the provision of online access to federal services by 2001 and the establishment of an online access portal for government services. Since then, many subsequent digital government strategies have been announced and implemented.

### *Government Online (2000)*

In April 2000, the Australian Government announced the Government Online strategy as a more systematic online strategy for government services (Australian Government, 2000). This was the first step in e-government in Australia. The goals and strategies presented by Government Online are as follows.

**Objectives**

- Government Online has as its objective an environment where virtually all government services are available around the clock to anyone.
- Government Online has as its objective a complete range of high quality, low cost online services.
- Government Online has as its objective tailored services that are easy to use and allow people to interact with Government in a way which is natural to them.
- Government Online has as its objective bringing government closer to people to encourage people to interact with government.

**Strategy**

- Agencies to take full advantage of the opportunities the internet provides
- Ensure the enablers are in place
- Enhance government online in regional Australia

- Enhance IT industry development impact of government online initiatives
- Government business operations to go online
- Monitor best practice and progress
- Communicate with stakeholders

(Australian Government, 2000)

***Better Services, Better Government (2002)***

In November 2002, the Australian Government announced its second-phase e-government strategy: "Better Services, Better Government". This was an improvement from the one-step strategy of establishing government information and services online. In other words, it involved the adoption of comprehensive and integrated ICT application to government information, service provision and administration. Specifically, after the completion of the online transition of government services by 2001, six new e-government tasks were set, as follows.

- achieve greater efficiency and a return on investment
- ensure convenient access to government services and information
- deliver services that are responsive to client needs
- integrate related services
- build user trust and confidence
- enhance closer citizen engagement

(Commonwealth of Australia, 2002)

***Responsive Government: A New Service Agenda (2006)***

In March 2006, the Australian Government published *Responsive Government: A New Service Agenda* as a three-step e-government strategy. The four strategic areas presented in this report are as follows.

- meeting users' needs
- establishing connected service delivery
- achieving value for money
- enhancing public sector capability

(Commonwealth of Australia, 2006)

***Strategic Vision for the Australian Government's Use of ICT (2011)***

In April 2011, the Australian government issued a draft of its *Strategic Vision for the Australian Government's Use of ICT*, which proposed a long-term plan for the use of government information and communication technology to support public-sector productivity improvements. This draft aimed to change the focus of

government ICT usage from the existing "ICT efficiency" to "improved productivity" in the next five years (Australian Government, 2011a).

To this end, the Australian government proposed three strategic priority areas: better service delivery, open engagement and improved government operational capacity to achieve the vision of "productivity improvement in the public sector". The second version of the draft was revised to propose a long-term plan for 2020 and was implemented afterwards (Australian Government, 2011b).

However, this strategy did not last long because the Australian National Commission of Audit issued its audit results in the field of information policy in February 2014 and concluded that improvements were needed in e-governance. As a result, the Digital Transformation Office (DTO) was established in July 2015 as the organization responsible for information policy.

### *Digital Transformation Agenda (2016)*

In 2016, the Australian Government set out its "Digital Transformation Agenda". The agenda focused on delivering better and more accessible digital services to individuals and businesses. At the heart of Australia's digital transformation was the move towards digital services that are simpler, clearer and faster to use, and designed specifically to meet the needs and expectations of the people who will be using them.[2] The Australian Government's "Digital Transformation Agenda" is briefly summarized as follows.

**Vision**

Dealing with government will be simple and fast through any channel. Government will use its resources in the best way possible and will constantly monitor the performance of its services.

**Agenda**

Achieving this vision will require a comprehensive Digital Transformation Agenda that is:

- owned by all government agencies
- coordinated and assisted by the Digital Transformation Agency (DTA)
- focussed on changing the way government interacts with, and provides services to, users
- aimed at driving reform of policies and processes that stand in the way of transformation
- aligned with other whole-of-government reform agendas

### *Digital Government Strategy (2018)*

In 2018, the Australian government announced its "Digital Government Strategy" and promoted concrete strategies and a roadmap for the implementation of the "Digital Transformation Agenda" as follows.

**Vision**

By 2025, Australia will be one of the top three digital governments in the world for the benefit of all Australians.

**Three strategic priorities**

The strategic priorities recommended focused areas of development to achieve their vision.

- Government that's easy to deal with
  - Intuitive and convenient services
  - Integrated services supporting your needs and life events
  - Digital identity for easy and secure access
- Government that's informed by you
  - Smart services that adapt to the data you choose to share
  - Greater insights for better services
  - Trust and transparency
- Government that's fit for the digital age
  - Expanding digital capability
  - Developing modern infrastructure
  - Providing accountability

(Commonwealth of Australia, 2018)

The most important part of the current Australian government's digital transformation strategy is to bring all government services online within seven years. Therefore, the title of the report is *Vision 2025: We Will Deliver World-Leading Digital Services for the Benefit of All Australians*. What is especially noteworthy is the digitization of all work that requires visiting public institutions. As part of their efforts to eliminate formalism and bureaucracy, they aim to complete these tasks by 2025.

## Digital government policy: processes and contents of various countries

In addition to the United States, the United Kingdom and Australia, many countries are actively using ICT for digital transformation. Therefore, many countries around the world are pushing forward digital government policies. In this section, I would like to summarize the current state of digital government policies in other selected countries and the European Union.

### *The European Union*

The European Union (EU) has long pursued the Digital Single Market strategy, and e-government has been pursued as a concrete action plan for the Strategy. Until recently, EU e-government policies were based on the Malmö Declaration of 2009. The Ministerial Declaration on eGovernment was approved

unanimously in Malmö, Sweden, on 18 November 2009, and highlighted four political priorities.

- Citizens and businesses are empowered by eGovernment services designed around users' needs and developed in collaboration with third parties, as well as by increased access to public information, strengthened transparency and effective means for involvement of stakeholders in the policy process;
- Mobility in the Single Market is reinforced by seamless eGovernment services for the setting up and running of a business and for studying, working, residing and retiring anywhere in the European Union;
- Efficiency and effectiveness is enabled by a constant effort to use eGovernment to reduce the administrative burden, improve organisational processes and promote a sustainable low-carbon economy;
- The implementation of the policy priorities is made possible by appropriate key enablers and legal and technical preconditions.

(EU, 2009)

*The European eGovernment Action Plan (2011–2015)*

The European Commission's eGovernment Action Plan for 2011–2015 was released in 2010 to support the provision of a new generation of e-government services (EC, 2010). It included four political priorities based on the Malmö Declaration. The eGovernment Action Plan aimed to help national and European policy instruments work together, supporting the transition of e-government into a new generation of open, flexible and collaborative seamless e-government services at local, regional, national and European level.

As part of the Commission-wide effort to promote a smart, sustainable and inclusive economy for the European Union, as outlined in the Europe 2020 Strategy, the Action Plan contributed towards fulfilling two key objectives of the Digital Agenda for Europe.

- By 2015, a number of key cross-border services will be available online – enabling entrepreneurs to set up and run a business anywhere in Europe independently of their original location, and allowing citizens to study, work, reside and retire anywhere in the European Union
- By 2015, 50% of EU citizens will have used eGovernment services

(EC, 2010)

*The new eGovernment Action Plan (2016–2020)*

The new eGovernment Action Plan for 2016–2020 was released in 2016, aimed at removing existing digital barriers to the Digital Single Market and preventing further fragmentation arising in the context of the modernization of public administrations (EC, 2016). The digital transformation of government was

sought as a key element to the success of the Digital Single Market, helping to remove existing digital barriers, reducing administrative burdens and improving the quality of interactions with government.

The eGovernment Action Plan for 2016–2020 recognized this opportunity and proposed an ambitious vision to make public administrations and public institutions in the European Union open, efficient and inclusive, providing borderless, personalized, user-friendly, end-to-end digital public services to all citizens and businesses in the EU. It suggested using innovative approaches to design and deliver better services in line with the needs and demands of citizens and businesses. Finally, it envisaged public administrations using the opportunities offered by the new digital environment to facilitate their interactions with stakeholders and with each other.

In order to pursue these objectives, the eGovernment Action Plan for 2016–2020 identified three policy priorities.

- Modernising public administrations using key digital enablers (for example technical building blocks such as CEF DSIs like eID, eSignature, eDelivery, etc.),
- Enabling mobility of citizens and businesses by cross-border interoperability,
- Facilitating digital interaction between administrations and citizens/businesses for high-quality public services.

(EC, 2016)

### *Denmark*

Denmark is currently one of the leading countries in the field of digital government policy. Denmark ranked first among the 28 EU Member States in the Digital Economy and Society Index in 2017 and it progressed at a higher pace than the EU average. Furthermore, it was the world's number-one country in the 2018 UN e-Government Survey. Denmark ranked first in the world in both the e-Government Development Index and the e-Participation Index in the 2018 UN e-Government Survey.

Denmark is displaying outstanding performance in the delivery of online public services based on consistent long-term national policies. The Digital Strategy for 2016–2020, an umbrella governmental digital plan presented in May 2016, aims at further enhancing close public-sector collaboration to deliver good, efficient and coherent services to the public and businesses.

#### *Digital Strategy (2016–2020): "A Stronger and More Secure Digital Denmark"*

The Digital Strategy for 2016–2020, titled "A Stronger and More Secure Digital Denmark", sets the course for Danish public-sector digitization efforts and their interaction with businesses and industry. The government's Digital Strategy concerns the authorities at all levels of government, from central government to regions and municipalities (Agency for Digitisation, 2016).

The Danish government, local government and the Danish regions have entered into an agreement on the Digital Strategy for 2016–2020. The Strategy will help shape the digital Denmark of the future and ensure that the public sector can seize the technological opportunities to create added value, growth and efficiency improvements while maintaining the confidence and trust of Danes in the digital society.

The Digital Strategy for 2016–2020 contains 33 specific initiatives that together lay the foundation for public-sector digitization in the years to come. Further initiatives and efforts will be launched or adjusted up to 2020 in order to meet current needs and technological possibilities.

*Government Transformation Strategy (2016)*

Apart from the existing Digital Strategy for 2016–2020, the Danish government announced the Government Transformation Strategy in 2016 (Government Digital Service, 2016). The main contents of this are as follows.

**Vision**

- better understand what citizens need;
- assemble services more quickly and at lower cost; and
- continuously improve services based on data and evidence

**Strategy**

- business transformation
- grow the right people, skills and culture
- build better tools, process and governance for civil servants
- make better use of data
- create shared platforms, components and reusable business capabilities

(Government Digital Service, 2016)

***Sweden***

Sweden is one of the international leaders with regards to e-government and was ranked fifth in the world in the 2018 UN e-Government Survey (United Nations, 2018). The Swedish government has based its progress on strong policy aspirations. The major process of e-government development in Sweden is briefly summarized as follows.

The Swedish overnment's objectives for a digitally interoperable government administration – eGovernment – are:

- a simpler day-to-day life for citizens;
- a more transparent administration that supports innovation and participation; and
- enhanced quality and efficiency in government activities.

(EU, 2015)

Along with pursuing e-government, the Swedish government is continuously promoting the policy of digital transformation. The goal of its digital transformation policy is for Sweden to lead the world in seizing the opportunities of digitalization.

In November 2011, the Swedish government announced "ICT for Everyone: A Digital Agenda for Sweden" to promote ICT for all. The purpose of the Digital Agenda was to collate all ongoing activities in a horizontal and cohesive manner to make use of all the opportunities offered by digitization to individuals and businesses (Government Office of Sweden, 2011). The Digital Agenda identified the need for efforts in four strategic areas based on the user's perspective: e-government should be easy and safe to use; it should provide services that create benefit; there is a need for infrastructure; and ICT should play a role in societal development.

Subsequently, in June 2017, the government of Sweden aimed to become a world leader in utilizing the opportunities of digital transformation for achieving sustainable development in the country and announced *For Sustainable Digital Transformation in Sweden – a Digital Strategy* (Government Office of Sweden, 2017). With a vision to promote sustainable digital transformation, the Swedish government proposed the following five key areas of action to become a global leader in leveraging digital transformation opportunities.

- Digital skills: The digital skills goal entails everyone being familiar with digital tools and services and having the ability to follow and participate in the digital transformation based on their own situation.
- Digital security: The digital security goal entails people, companies and organisations having trust and confidence in the use of digital services and being able to use them easily.
- Digital innovation: The digital innovation goal entails the existence of competitive conditions for the creation and spread of new or improved products and services of value to society, companies, the environment and people.
- Digital leadership: The digital leadership goal entails activities being improved, developed and enhanced through governance, measurement and follow-up.
- Digital infrastructure The digital infrastructure goal entails an improvement and reinforcement of infrastructure for electronic communications that are crucial for transmitting data.

(Government Office of Sweden, 2017)

## Case study: changes in governance – the case of Australia

Until the mid-1990s, Australia's information policy was handled by the Ministry of Finance and Administration. Specific e-government policies were carried out in the affiliated Office of Government Information Technology (OGIT), which was established in 1995.

In 1997, the Office of Government Online (OGO) was created by transferring the functions of OGIT to the Department of Communication, Information Technology and the Arts (DCITA). The National Office for the Information Economy (NOIE) was also established. Hence, DCITA led the information policy around these two organizations. NOIE was the overarching organization for the knowledge economy including e-commerce, online services, the internet and e-government. OGO was an e-government implementation organization centring on the electronic provision of government-level administrative services. At the end of 2000, the function of NOIE was expanded and the function of OGO was integrated into NOIE.

In April 2004, the Australian Government Information Management Office (AGIMO) was established within the Department of Finance and Deregulation (DFD) to specialize in e-government and information management functions. In parallel with this, in November 2008, the Secretaries' ICT Governance Board (SIGB)[3] was established as a new governance system to oversee the implementation of the ICT Reform Agenda. These two organizations performed the following functions.

> The SIGB had responsibility for the whole-of-government use of ICT. The SIGB provides advice to Government on ICT matters and strategic ICT investments. The SIGB was continued to support the Government and agencies on whole-of-government ICT priorities, investments and arrangements. The SIGB supervised implementation of the ICT strategic vision and the Government's ICT work program …
>
> The Australian Government Information Management Office (AGIMO), in the Department of Finance and Deregulation plays a lead role in driving the efficiency and effectiveness of the Government's use of ICT. AGIMO also implements specific reforms including coordinated ICT procurement, the Gov 2.0 agenda, data centre consolidation and ICT investment management. Building on its position as lead agency, including for adoption of Gov 2.0 across government, AGIMO will collect and analyse information to assist the Government and SIGB in setting future directions …

These e-government-driven organizations changed as digital government and digital transformation were introduced in 2014. As mentioned earlier, in February 2014, the Australian National Commission of Audit issued its audit results in the field of information policy and concluded that following improvements were needed in e-governance.

> **Recommendation 62: e-Government**
>
> e-Government services are often preferred by citizens, businesses and other government customers because they are more convenient and generally cheaper and more accurate. The Commission recommends that the Government accelerate the transition to online service delivery by:

a. setting an ambitious digital strategy that:
    i. makes myGov the default means of engaging with government, supported by 'opt-out' provisions;
    ii. sets concrete savings targets;
    iii. removes legislative barriers; and
    iv. strengthens the myGov online credential;
b. consolidating the e-Government effort through a single team under the leadership of a Chief Digital Officer; and
c. appointing a senior minister to champion the digital by default agenda.

(www.ncoa.gov.au/report/phase-one/part-b/10-6-e-government)

As a result, the Digital Transformation Office (DTO) was established in July 2015 as an executive agency responsible for information policy. The DTO was created with a clear mission: to help deliver simpler, clearer and faster public services, making it easy to work with the government. The DTO was moved to the prime minister and cabinet's portfolio in September 2015. In October 2016, the DTO transformed into the Digital Transformation Agency (DTA). The government announced the formation of the Digital Transformation Agency to absorb the DTO and the extension of its functions to oversee major ICT projects, thus increasing transparency of these projects and accelerating the delivery of the Digital Transformation Agenda.

As a follow-up measure, in December 2016, machinery-of-government changes transferred responsibility and resources for whole-of-government ICT policy and strategy functions from the Department of Finance to the DTA; in May 2017, ICT-coordinated procurement functions were transferred from the Department of Finance to the DTA. Consequently, Australia's information policy is currently being implemented by the DTA, which is responsible for the following tasks.

- *Develop a digital transformation roadmap*
- *Deliver and improve digital platforms*
- *Oversee and advise on ICT and digital investment*
- *Transform ICT procurement*
- *Build Australian public service ICT and digital capability*

(www.dta.gov.au/)

## Lessons learned: the establishment of a powerful control tower for digital government

By looking at the e-government initiatives in many countries around the world, in this chapter we learned the importance of a powerful control tower for policy sustainability. Many countries are promoting digital policies and presenting a variety of digital government initiatives. All of these policies include visions and strategies driven by a variety of roadmaps and action plans. Therefore, benchmarking good strategies and visions from other countries is a very easy task.

When a country promotes e-government projects for its transformation into a digital government, the most important factors can be summarized as follows.

First, as we have seen, strong leadership as well as the insight and will to implement digital government are essential for successful transformation of the government. Along with the installation of basic ICT infrastructure, a change in public officials' perceptions, the use of digital technology to change business processes within the government, the provision of new electronic administrative services, open and shared administrative database and legal and institutional improvements are some of the key factors that are also needed. In addition, for many countries it is also important to establish the right organization for promoting the digital government.

The policies for implementing digital government today are not limited to technical details, as was once the case. Implementing digital government requires enormous changes across all areas of government. Therefore, it is not possible to promote digital government policy through a single department or sub-agency. In order to successfully accomplish such a comprehensive government transformation, a powerful control tower is needed to direct various ministries and coordinate tasks among them. The establishment of this powerful control tower involves three important aspects, which need mentioning.

The first concerns the strong authority of the control tower. In order for this powerful control tower to work properly, authority must to be transferred to its leadership so that it is provided with the means to control and manage the various departments. In this process, the most important component is the right to allocate the budget in the field of information policy. The reason why US digital government policies were sustainable and remained steady regardless of the change of administrations is that the Office of Management and Budget (OMB) pursued digital government policies with strong budget authority.

However, as seen in many countries, it is not realistic for a ministry in charge of the budget to lead government transformation. Therefore, it is very important to grant the authority for allocating and executing the digital government budget to the organization that is responsible for the digital government policy.

The second aspect concerns the structure of the powerful control tower configuration. Many countries are repeating the process of establishing and running ICT-related committees directly under one presidency and observing their dissolution after the formation of a new government. As such, committees have an advantage in coordinating across several ministries, but there is a problem with their sustainability. Therefore, as in the US NPR and OMB example, it is important to combine a temporary committee responsible for national affairs under a leader with a strong organization that is committed to the digital government. What should be noted in this process is the need to avoid attaching excessive political significance to the changes. In other words, if the digital government policies are advertised as the achievements of individual leaders, it may be difficult to secure their sustainability when administrations change.

The third aspect deals with the affiliated agencies and human resources in the configuration of the powerful control tower. In many countries, digital

government promotion policies are managed by ICT-related ministries as they are known to be the ICT experts. In this case, digital government policies are driven by technology adoption. However, it is more appropriate for the ministries that lead administrative innovation to manage digital government policies as well. Not only should their members include ICT experts, but they should also involve as key members officials who are experienced in and responsible for government budget management and government innovation.

## Notes

1 In December 2000, the UKonline.gov.uk citizen portal was launched to provide a one-stop-shop to public services online.
2 Australia's digital transformation initiative is basically a benchmark of the Government Digital Service (GDS), which was promoted in the UK in 2010–2015.
3 The SIGB replaces the Secretaries' Committee on ICT (SCICT), which was previously launched in June 2006, and its first departure was the Information Management Strategy Committee (IMSC) launch in 2002.

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# Part II

# The UN e-government survey

# 4 The progress of e-government development

## Introduction

The evaluation of e-government is a necessary task as it assesses the results of e-government implementation efforts and establishes the direction for future e-government. In general, the level of e-government has been evaluated based on the developmental stages by identifying which stage of development of e-government corresponds to the current state.

The development phase of e-government and electronic service delivery has long been a major concern of e-government research. This tendency was particularly evident as international organizations such as the United Nations and multinational consulting firms conducted comparative analysis of electronic civil administration services in various countries around the world. These developmental-stage models involved stages of development or maturity of e-governments that progressed sequentially. Amidst such efforts, the United Nations proposed a developmental-stage model to evaluate e-governments.

However, from the perspective of digital government that is realized through digital transformation, this development-stage model of e-government may no longer be valid today. In the near future, more tailored and advanced digital government services that utilize the rapidly developing intelligent information digital technologies will become a necessity. Thus, the e-government development model needs to be revised and updated in expectation of such progress.

In this chapter, rather than broadly examining the development of information technology and its maturity, I would like to summarize the developmental stages of e-government that were discussed at the early development stage of e-government itself. Subsequently, given the recent trends in digital government development, I would like to propose a new desirable development model. These chapter proceeds as follows.

- Early stages of e-government development
- The stage model of UN e-government evaluation
- Recent development directions of digital government
- The development model of desirable digital government

## Early stages of e-government development

Since the early 2000s, much research has been done on the maturity model of e-government in academia. This is because information systems development and maturity models have already been studied in the field of IT management.[1] The maturity models of information systems were introduced from the private sector and applied into the domain of government and public services as development-stage models of electronic government and electronic administrative service delivery. In addition, international consulting firms also proposed various stage models of e-government development. The following is an overview of the early phases of e-government development.

### *Australian National Audit Office (1999)*

In 1999, the Australian National Audit Office assessed the extent to which Australian public institutions were attaining electronic service delivery and conducted assessments based on two criteria: the level of information technology development and the level of functions and services provision (Australian National Audit Office, 1999). Their reports outline the rationale, approach and methodology for the performance audits of Commonwealth agencies' preparedness to deliver services through the internet. The reports then set out how an agency can decide what level of internet service delivery is appropriate to its goals, as well as the proportions of agencies at the different stages of developing internet service delivery. The reports also mention the Office for Government Online (OGO) as the agency responsible for the whole-of-government approach in using information technology and telecommunications in the public sector.

The electronic service delivery model of Australian public institutions presented in these reports is divided into four stages, as follows.

- *Stage 1: Website presence. Basic information and publications. All agencies should be at least at this "publish" level.*
- *Stage 2: Database queries online. Agencies with public databases should be at least at this level of interaction.*
- *Stage 3: Agency interaction with clients, including client entry of confidential data. All agencies requiring authenticated client information should aim at this level.*
- *Stage 4: Agencies receiving authenticated information share data with other agencies with prior approval of individual clients.*

(Australian National Audit Office, 1999)

In the early 2000s, based on the concept of the Australian National Audit Office published in 1999, e-government projects around the world were developed into four stages: appearance, interaction, transaction and information sharing. In January 2001, ICA, an international organization for administrative

informatization, applied the model to investigate and report the level of electronic service delivery of its member countries in eight civil applications including taxes and employment (ICA, 2001). In 2001, the EU also assessed EU countries using this four-stage model.

### *IBM (1999)*

In July 1999, the Institute for Electronic Government of the IBM Corporation presented the vision and strategy of e-government (Caldow, 1999). The report criticized the concept of e-government as being too narrowly defined, and argued that it should be broadly defined, inclusive of the concept of digital democracy. According to this report, in order for e-government to be implemented, the following components must be developed, individually or in combination, with the overall technology strategy.

- *Leadership*
- *Policy*
- *Economic Competitiveness*
- *Citizen Services*
- *Intranet & Extranet*
- *Community*
- *Digital Democracy*
- *Pulling it All Together – Technology Behind the Scenes*

(Caldow, 1999)

The most emphasized part of its 1999 report is the necessity for a website or government portal for providing services electronically to citizens. In particular, it proposed that the government portal should provide services in five major areas (citizen, business, education, community and digital democracy services). Therefore, the significance of this report is the extension of the concept of e-government to include digital democracy, expanding further beyond the leadership component that was highlighted in the past.

### *Gartner Group (2000)*

In a November 2000 report, Gartner Group announced the "Four Phases of E-Government Model" (Baum & Di Mayo, 2000). This report presented one of the problems faced by the government in the implementation of e-government as a roadmap for measuring the progress of e-government projects and achieving desired customer service. The e-government model presented in Gartner Group's report suggests stages of presence, interaction, online transaction processing and transformation in virtual space. The Gartner Group's Four Phases of E-Government Model demonstrates the progression of e-government in the connected environment and identifies strategies and other factors that contribute to success in each phase. Ultimately, integrated services can be provided in the

stage of transformation. It also describes how these strategies change in three dimensions: time, customer value and cost/complexity. According to the model, the four phases of e-government are:

- *presence*
- *interaction*
- *transaction*
- *transformation*

### *Deloitte (2000)*

In 2000, Deloitte Consulting published a report titled *At the Dawn of e-Government: The Citizen as Customer* (Deloitte Research, 2000). This report was based on an empirical study of top-management perspectives from more than 250 state-level government departments in Australia, Canada, New Zealand, the United Kingdom, and the United States. It begins by mentioning the importance of customer-centric governments and emphasizes business process re-engineering (BPR) and customer relationship management (CRM) as the means to accomplish this end. Next, the report introduces information technology including the internet within the context of the government and lists the development process of e-government as the following six stages.

> Stage 1: Information Publishing/Dissemination
> Stage 2: "Official" Two-Way Transactions
> Stage 3: Multi-Purpose Portals
> Stage 4: Portal Personalisation
> Stage 5: Clustering of Common Services
> Stage 6: Full Integration and Enterprise Transformation
>
> (Deloitte Research, 2000, 22–24)

### *Accenture (2001)*

Accenture has been measuring e-government leadership since 2000; in 2001, it conducted research on 22 countries around the world with the following questions (Accenture, 2001). What progress has been made in the development of e-government? What actions have national governments taken to turn their vision into reality? What opportunities exist for countries to truly exhibit e-government leadership?

The main contents of this study were as follows: e-government maturity was measured by separately identifying the e-government service aspect (service maturity) and the delivery system aspect (delivery maturity) for service delivery. Services were categorized into three levels – "Publish", "Interact" and "Transact" – which reflected the maximum level at which a particular service could be offered.

- *Publish – Passive/Passive interaction*
- *Interact – Active/Passive interaction*
- *Transact – Active/Active interaction*

(Accenture, 2001)

## The stage model of the UN e-government evaluation

Since the late 1990s, countries around the world have begun to pursue policies for digital government in response to the rise of the digital economy (Tap Scott, 1996) and many multinational consulting firms have begun to evaluate digital government level and development stage in many countries around the world. The United Nations also began the UN e-Government Survey in 2001, keeping pace with this global trend.

The United Nations evaluated 190 countries and published the results in 2002 (UN, 2002). The 2002 report, *Benchmarking e-Government: A Global Perspective*, was a preliminary report for establishing an evaluation system; since 2003, the actual results have been published and compared (UN, 2003). The evaluation was carried out every year until 2005.

The evaluation index was revised in 2006 and new evaluations based on the revised evaluation index have been conducted since 2008. The 2008 evaluation was conducted in 192 UN member countries and has been implemented biennially since then. The changes in the development stages of the United Nations' e-government evaluation are summarized below.

### *UN evaluation in 2002*

The first United Nations e-government evaluation in 2001 was jointly conducted by the American Society for Public Administration (ASPA) and the United Nations Division for Public Economics and Public Administration (UNDPEPA) (UN, 2002).

Two methodologies were used in the survey as follows.

> First, national government websites were analysed for the content and services available that the average citizen would most likely use. The presence, or absence of specific features contributed to determining a country's level of progress. The stages present a straightforward benchmark which objectively assesses a country's online sophistication. Second, a statistical analysis was done comparing the information and communication technology infrastructure and human capital capacity for 144 UN Member States.
>
> (UN, 2002, 1)

The website research was conducted during a three-month period with two intervals from May to July and repeated from October to December 2001 in order to measure progress and ensure accuracy. Among the 190 surveyed countries, 169 countries had an established online presence with official government websites.

In 2002, the UN and ASPA proposed five stages of online presence that may characterize a government organization's website: (1) Emerging Web Presence, (2) Enhanced Web Presence, (3) Interactive Web Presence, (4) Transactional Web Presence and (5) Fully Integrated Web Presence. In order to quantify the results, a numerical scale ranging from 1 to 5 was used, with stage 1 representing Emerging Web Presence and stage 5 representing Fully Integrated Web Presence. Each stage was further analysed for the presence of specific features and content and measured by intervals of 0.25.

At stage 1, Emerging Web Presence, there were 32 countries, which were among the poorest in the world. At stage 2, Enhanced Web Presence, there were 65 countries. The majority of countries at stage 2 showed a greater degree of diversity in their online content and the quality of information than those at stage 1. At stage 3, Interactive Web Presence, there were 55 countries. Stage 3 clearly embodies a citizen-centric approach as content, information and services evolve to meet the people's expectations rather than what governments prefer to offer.

At stage 4, Transactional Web Presence, complete and secure transactions like obtaining visas, passports, birth and death records, licences or permits take place and users can actually pay online for services, parking fines, automobile registration fees, utility bills and taxes. Digital signatures may be recognized in an effort to facilitate procurement and doing business with the government. Secure sites and user passwords are also present. In 2001, only 17 national governments (or 9 per cent of UN Member States) were at stage 4 and offered the capacity to conduct transactions online, where citizens could use the internet to pay for a national government service, fee or tax obligation. They were Australia, Brazil, Canada, Finland, France, Germany, Ireland, Italy, Mexico, New Zealand, Norway, Portugal, South Korea, Singapore, Spain, the United Kingdom and the United States.

There were no countries that achieved the fifth and last stage of e-government development, Fully Integrated Web Presence.

### *UN evaluation in 2010*

After its launch in 2002, the UN e-government evaluation approach maintained five levels of web development until 2008 and has been applying four levels from 2010 onwards.[2] In addition, the e-Readiness Index, which had been used until 2008, has also been converted to the e-Development Index. The online services index is one of the three components that constitute the United Nations e-Development Index. The content of the "four stages of online service development" presented by the UN report in 2010 can be summarized as follows (UN, 2010, 95).

Stage 1: emerging information services
Stage 2: enhanced information services
Stage 3: transactional services
Stage 4: connected services

The top ten countries in e-government development announced by the UN in 2010 under the revised "four stages of online service development" were as follows: South Korea, the United States, Canada, the United Kingdom, the Netherlands, Norway, Denmark, Australia, Spain and France. The evaluation of these online services is now based on evaluating and aggregating several websites of a country, rather than relying on a single national portal as in the past. Through these efforts, the United Nations' e-government evaluation approach was greatly improved in 2010.

## Recent development directions of digital government

Today, we cannot evaluate a country's digital government level based on one website or government portal alone. Recently, projects related to digital governments have been carried out in accordance with new technological innovations such as mobile internet, cloud computing and artificial intelligence. Therefore, from this point of view, nothing has been agreed so far regarding the evaluation of the development phase of e-government.

### *Decline of the development stage theory*

The unfolding development of the past, that is, advancing beyond the second stage and entering the third stage, is no longer meaningful in the field of digital government today. This is because the introduction of new smart information technologies enables us to instantly leap from stage 2 to stage 4. For example, many countries in Africa are adopting wireless telephone without going through the installation of landline infrastructures.

As we saw earlier, e-government in the early 1990s focused on the economic efficiency of the system. Later, after undergoing considerable development, administrative efficiency and government transparency in the promotion of e-government received the spotlight in the 2000s. Since 2010, governance and trust of government have emerged as key values to be pursued. In recent years, sustainable development has attracted wide attention. As such, e-government has developed alongside various values. However, digital government's environment is now completely different from how it was in the past.

Nowadays, digital governments may not be subject to the unilateral development stages of the past. Moreover, the environment surrounding digital government is changing rapidly with the development of convergence technology for governments.

Therefore, in the era of intelligent digital government that we will enter in the near future, it will be necessary to evaluate based on the criteria of how to introduce more innovative administrative service delivery methods to the public sector rather than the development stage of each country. In addition, digital government should use ICT to solve various social problems. In short, this means driving social innovation through digital government.

Therefore, in this context, the various stages of development of the past e-government discussions are likely to become meaningless. Therefore, rather than the previous development model, new development models including service levels must be prepared to promote digital government through digital transformation.

### *New factors to consider in digital government*

Since 2010, the OECD and the World Bank have paid great attention to the implementation of digital government as one of the strategies for enhancing the quality of government in preparation for future society. Through their long research and analysis, they have presented digital government as a new government paradigm that can continuously create added value by utilizing the ICT inherent in society. In particular, many developed countries such as the United States and the United Kingdom have recognized and promoted digital government models that can change the service delivery system, policy decisions, communication and participation methods to meet the needs of the people as a desirable future form of government.

Digital government is now expanding its role and meaning as a paradigm of government operation that directly solves national social problems beyond government innovation. The next step for digital government research is to present a comprehensive blueprint of government innovation that can contribute to the sustainable development of the international community, including the United Nations. This means that there is a need for a future-oriented digital government model that creates sustainable development at the social, economic and environmental levels.

Countries that have scored on the upper levels of the UN e-government development model evaluations are now developing new paradigms of digital government. There is a need for the development of digital government that differs from the previous models and aims at new values, objectives and approaches that can accommodate changes in the future environment.

To this end, it is necessary to go beyond the previously defined development stages, which are limited to the provision of technology and services, to propose a new development model that considers the characteristics and various components of digital government. Considerations for the development of a new digital government can be summarized as follows. There are five major factors to consider in the development of digital government: technology, services, data, human resources and governance.

First of all, the technology sector is advancing well beyond the ICT of the past and we are now experiencing a completely new paradigm of work, with the convergence of various technologies such as the internet of things, the cloud, big data and artificial intelligence. As a result, various application tasks that were impossible in the past have now become possible. Furthermore, as in the case of bring your own device (BYOD), foundations are being laid for people to access and receive services through any device.

The service sector is evolving to provide personalized services to individuals. This is the most important marker used to identify the level of digital government development. These personalized services provide all services (single, integrated, online-to-offline (O2O) etc.) customized to each customer and represent changes in all areas of service, driven by new concepts such as user experience (UX).

The data sector is also quite different today from how it was in the past. The era of big data includes real-time data, public/private structured and unstructured data (database), big data analysis information, social information and real-time sensors and hyper-connected information that provide resources for e-government that can be analysed in real-time.

Human resources are recognized as a new form of economic and social capital that enables non-discriminatory access, capacity development, policy participation and the creation and sharing of all information held by citizens in both public and private sectors. In many countries, however, there are actually many vulnerabilities in this area. Generally speaking, unlike technology, human resources are limited in that they cannot be developed overnight.

Finally, governance perspective is one of the most important factors. This includes country-specific digital government initiatives and relevant legal and administrative processes. Furthermore, since the establishment of digital governance is essential to the implementation of digital government, various governance systems, including electronic citizen participation, must be established.

## The development model of desirable digital government

The past development model of e-government that focused on government efficiency is now turning to digital government that uses ICT to solve all the problems of modern society. Therefore, the development model of digital government is different from the past development model of e-government. In this process, the focus is on the values upheld by digital government rather than on the technologies and services that underpinned the past development model. Indeed, like e-government, digital government is also trying to provide advanced services through the use of ICT. But when evaluating the development of digital government, more emphasis will be placed on the value of governments rather than the use of technology. The value that should be emphasized in the digital government development model can be largely divided into good government and trusted government.

### *Good government*

In general, good government is about the values that the government seeks. However, from digital government's perspective, good government means using ICT to properly perform the role of government. Today, due to the use of various information technologies in the knowledge and information society, citizens' expectations towards the government have also changed a lot. Thus, while the role of government in the past was to handle administration work for and of its

citizens, the digital government that we mention today is a government that takes care of all the issues preemptively and autonomously, regardless of its citizens' requests.

In the past, citizens were simply beneficiaries of government policies and services. In a digital government, however, citizens must both be beneficiaries of the services and participants in government decision making processes. This requires the active participation of citizens in making government decisions. In other words, it is necessary to establish digital governance led by citizens through electronic civic participation.

In this process, administrative services that are completely different from those of the past must be provided. Previously, the same service would have been provided to all citizens, but now digital government must provide customized services for each citizen. This is made possible through big data analysis using new ICT. In order to transform into such a customized government, it is necessary to pursue a government based on a digital platform. This means that once the technical foundation for the use of ICT is established, administrative services are provided from the citizen's point of view.

These good governments are now rapidly evolving into intelligent digital governments. An intelligent government refers to a government that preemptively takes care of its citizens' needs. This involves a combination of artificial intelligence and big data technologies in administration. It is also accompanied by the transition from civil service-centred administration to citizen-centred administration, laying the foundation for prompt and proactive administrative services anytime and anywhere. Ultimately, citizens will be provided with administrative services without having to look for government offices or wait in line. All in all, this is the highest level of development in digital government.

### *Trusted government*

Along with the establishment of a good government, another value that must be emphasized is trust in government. Trusted governments come in various forms because of the characteristics of digital technology and cyberspace. A highly trusted government incorporates the following three principles. The first is transparency. In other words, a traditional form of trusted government uses information technology to ensure it operates in a fair, honest and transparent way. The second is security – a secure government is not open to forgery or tampering within its administrative processes. This can be implemented by introducing various ICTs such as blockchain. The third principle of a trusted government is privacy, emphasizing the avoidance of becoming an electronic surveillance government. Therefore, a trusted government focuses on personal information protection.

#### *Transparency in a trusted government*

In general, corruption among government officials or within government is drawing increasing attention and is becoming a serious social problem in many countries. In particular, international organizations have highlighted such

corruption as having a negative impact on national credibility and national competitiveness. Public-sector corruption has been treated as an issue that is separate from and unrelated to the realm of ICT. However, with the advent of e-government, suggestions have been made to proactively respond to such corruption.

Specifically, this involves using ICT to disclose all government information to citizens. This is the basic philosophy of the Open Government concept. Through the implementation of information systems, such transparency opens up to the citizens all information as well as public administrative processes. In this way, greater transparency in the administration of government can effectively deal with corruption in the public sector.

This is an increasingly necessary part of digital government as all administrative processes become digitized. With the development of digital government, whereby all administrative processing is carried out through information systems, not only can the citizens monitor the handling of administrative processing but also the implementation of policies in real time. In this case, citizens will have the same intelligence as policy makers on specific issues, thereby ensuring transparency in policy implementation. Furthermore, improving the transparency of these information systems will further motivate the electronic civic participation of the public.

### *Security in a trusted government*

Digital government administrative services in virtual spaces always carry the risk of counterfeiting and tampering. In particular, due to the nature of infinite digital replication, such services are exposed to a variety of cyber risks in the virtual space. The perceived threats towards e-government initially focused on the intrusion of computer networks, but are now evolving in various ways that range from hacking to cyberwar, all resulting in potential widespread damage.

Therefore, the implementation of secure e-government is emerging as an issue of utmost importance. Recently, blockchain technology has been contemplated for establishing a secure digital government. As such, it is necessary to establish a trusted platform using blockchain to implement a trusted government. To this end, it is important improve public confidence in the government by integrating and utilizing blockchain-based administrative data that will enable verification, transmission and reception of electronic documents that cannot be forged or tampered with. Accordingly, it is necessary to establish in government administrative services a system that digitizes the entire process, from paperless electronic provisions to contracts, and uses blockchain in storage. This advanced level of security is one that many countries seek to pursue in their development of digital government.

### *Privacy in a trusted government*

The most advanced stage in the development of an existing e-government is integration. This means that all administrative information held by the government

is jointly used as a database and the work of several ministries is combined and integrated, rather than handled separately. Thus, this phase involves a holistic transition of the government. At this stage, while they may exist separately in reality, the ministries function as a single integrated entity and provide integrated information services in the virtual space.

The most important point at this stage is the protection of sensitive information in the process of collecting, storing and utilizing citizens' personal information. Due to persistent "Big Brother" controversies, the protection of personal information is now evolving into the concept of digital privacy. The potential power of "Big Brother" is now increasing more than ever as artificial intelligence and biometrics become prevalent. In the course of the development of digital government, the confidence and credibility of citizens will be lost if the possibility for and concern regarding electronic surveillance are not addressed.

Therefore, one of the most important factors to consider in today's digital government policy is the protection of personal information. And this is a concept that must be introduced from the early stages of designing various information systems. Through the protection of personal information, a secure and reliable information system must be established to secure the foundation of digital government. Thus, the implementation of a trusted government will be the ultimate step in the development of digital government.

## Case study: Tax Administration Division, South Korea (2018 UNPSA Winner)

Since the global economic crisis in 2008, the increase in social welfare spending has constrained the finances of national and local governments. The seriousness of the local fiscal crisis caused by various irregularities of public officials and the poor financial management of the heads of local governments demonstrated the need for the integrity and transparency of local finance. In this process, the local fiscal system based on control and management has shifted to the direction of securing transparency through active participation of residents and fiscal innovation.

In the Republic of Korea, disclosure of budget execution is not a statutory requirement. Chungcheongnam-do has concluded that it is desirable that all fiscal information should be made available to the public, in order to increase fiscal transparency and fiscal monitoring by expanding participation of residents, through 100 per cent digital disclosure of tax use history to residents in real time. The characteristic of fiscal information released by Chungcheongnam-do is the further extension of fiscal information in cooperation with the city and county as well as expansion of residents' participation. All budget information includes real-time expenditure information and shows the amount of money [spent thus far?] [that can be executed from the total amount to the present]. This budget information includes various materials to help understand such aspects as a mid-term plan and sustainable development indicators. In addition, a questionnaire answer box

was added to the person in charge of budget business, and a function of registering and responding to questions or suggestions about the budget was attached, as was a description of basic finance terms.

Apart from the central government, the provincial government has strengthened the disclosure of budget status, revenues and expenditure status, and settlement status on the website of Chungcheongnam-do Province. In particular, in the case of revenues and expenditures, in July 2013 a fiscal information disclosure system was established, linking 15 primary local governments in the province for the first time in the nation. For expenditures, all the contract methods, contract contents, and contract parties were disclosed, even meal expenses. As a result, citizens can check the budget execution status of Chungcheongnam-do online in real time. Fiscal surveillance has expanded and transparency and efficiency of fiscal spending have been maximized.

(UN, 2018, 6)

## Lessons learned: pursuing a leapfrogging strategy for digital government

The following lessons can be learned from the theoretical evolution of e-government development models. First of all, the developmental-stage model is not as relevant and powerful as it once was in explaining reality. In a past industrial society, government chose and implemented development strategy step by step, according to the logic of economic development. However, due to the emergence of smart mobile phones and the rapid development of intelligent information technology, this phased development strategy has lost its suitability in the process of implementing digital government.

Specifically, in the past, a very important evaluation factor of the development stage was whether or not a government provided electronic administrative services and provided the basis for it to carry out electronic financial transactions such as tax payments with its citizens. But now, with the emergence of smartphones and the use of apps, a government and its citizens can conduct electronic transactions easily through the private sector even without public ICT infrastructures. As a result, countries today no longer need to sequentially reach and achieve stages 1 through 5 as pursued in the past.

What is more important now is determining what and how administrative services should be provided to citizens in order to implement digital government. Furthermore, it has become more important for citizens to participate in the policy making and decision making processes. Therefore, regarding the development of e-government, the level of electronic civil service is no longer as important as it was in the past as the establishment of digital governance that embodies the digital government becomes more and more important. Furthermore, the integration of back-end organizations is becoming more important than the work of frontline organizations that provide electronic administrative services. Specifically, integrating back-end government agencies is crucial for providing citizens with integrated government service as one government entity.

Therefore, instead of pursuing stage-based development strategies that benchmark the development cases of developed countries, it is necessary for developing countries to implement digital government policies and to pursue a leapfrogging strategy that is more appropriate for them today.

## Notes

1 Originally, a study of the maturity model of information systems began with research by Nolan (1973). At that time, the focus was on the introduction and use of large computers to identify developmental stages and on the management of information systems. Along with the proposal of the four-step theory (Layne & Lee, 2001), research on the development phase in the field of e-government was revitalized in 2001 (Andersen & Henriksen, 2006).

2 The United Nations began preparations in 2006 for changes in e-government evaluation. In 2006, the United Nations established its Task Group on e-Government of the Partnership on Measuring ICT for Development. This organization was created to provide an international consensus on e-government performance evaluation. The organization proposed improvements in the scope and methods of evaluation to address the rapid development of ICT, mobile internet and broadband worldwide. These efforts were made to come up with a more structured, simplified and flexible evaluation method. As a result, the Task Group integrated the third and fourth stages in the previous e-Readiness Index and presented the new four-stage development model in the e-Development Index.

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# 5 Analysis of the UN e-government survey

## Introduction

The evaluation of e-government is a very important task in that it assesses implementation efforts and establishes the direction for future e-governments. In general, evaluation of the e-government level is based on the classification of various stages of development and identification of the current development stage of e-government.

Since 2002, the United Nations has been evaluating the level of e-government around the world. The 2002 survey report (*Benchmarking E-government: A Global Perspective*) was a preliminary report for establishing an evaluation system. Since 2003, actual results have been compared. Consequently, evaluation was conducted annually in 2003, 2004 and 2005 (UN, 2003, 2004, 2005). In 2006, the evaluation index was revised without the evaluation component and the new survey was conducted on a biannual basis from 2008 UN e-Government Survey onwards (UN, 2008).

The purpose of the United Nations' e-government evaluation is to communicate experiences and know-how among nations and to enhance decision makers' ability to determine e-government policies so that policy makers in member countries can successfully implement e-government initiatives. Hence, it is important to examine the United Nations' evaluation criteria and content in detail as countries around the world, especially developing countries, are sensitive to the evaluation of these international organizations.

Therefore, in this chapter, we examine the UN e-government evaluation criteria and also analyze the recent trend with a focus on the changes to the evaluation criteria. The contents of this chapter are as follows.

- UN e-Government Survey evaluation criteria
- Analysis of changes to the UN evaluation criteria
- Analysis of evaluation results in South Korea
- Policy implications

## UN e-government survey evaluation criteria

The United Nations' e-government evaluation methodology and criteria are very diverse, but the level of e-government in member countries is divided into two

areas: the e-development index and the e-participation index. Detailed evaluation criteria are as follows.

### *The e-Government development index (EGDI)*

The development of e-government and its criteria vary from state to state but the UN has created an evaluation method by dividing the level of e-government of member states into two indexes: development (the e-development index, EDI) and online participation (the e-participation index, EPI). The UN e-Government Survey, which is implemented every two years, shows some changes across surveys. According to the UN's e-Government Knowledgebase, the EDI is defined as follows.

> The EDI is based on a comprehensive Survey of the online presence of all 193 United Nations Member States, which assesses national websites and how e-government policies and strategies are applied in general and in specific sectors for delivery of essential services. The assessment rates the e-government performance of countries relative to one another as opposed to being an absolute measurement. The results are tabulated and combined with a set of indicators embodying a country's capacity to participate in the information society, without which e-government development efforts are of limited immediate use …
>
> Mathematically, the EDI is a weighted average of three normalized scores on three most important dimensions of e-government, namely: (i) scope and quality of online services (Online Service Index, OSI), (ii) development status of telecommunication infrastructure (Telecommunication Infrastructure Index, TII), and (iii) inherent human capital (Human Capital Index, HCI).
>
> (https://publicadministration.un.org/egovkb/en-us/About/Methodology)

#### *Level of online service (online service index, OSI)*

The most controversial part of the e-development index is the online service level, the evaluation of which is a quantitative assessment that is in accordance with the UN indexes. It is mainly carried out at the national government portal site or the official UN website. Specifically it measures a country's portal, health, education, social welfare, labour, finance and related government sites. Each step is measured and the measures are standardized (approximately 50,000 related services are included).

Since 2008 the measurement methodology has been altered to complement existing problems and to give a more fair and accurate measurement of online service level. Evaluators reduced the measurement period from 60 days to 35 days and are limited to a maximum of two times in their attempt to measure online service level. This is done to improve fairness and gives evaluators a reasonable time frame in which to evaluate. By adding new detailed questions and indicators

that correspond with the UN e-government standards, tolerance and standard deviation were reduced, which is included in steps three and four. Information gathering procedures were made more specific and given a different rating score to which the questions in concern were provided more information than the existing questions. Education and training measurements were added based on the status of ordinary citizens throughout the given country.

However, the following changes have been made in recent years. The UN has parted with the previous practices of indirectly relying on the data submitted by its member countries. Now, UN experts and online United Nations Volunteers (UNVs) directly evaluate portal operation in each country. Then, in the 2018 survey, previous direct surveys were replaced with a 140-point questionnaire.

### *Level of information and communication infrastructure (telecommunications infrastructure index, TII)*

The telecommunications infrastructure index (TII) is an arithmetic average composite of five indicators:[1] (i) estimated internet users per 100 inhabitants; (ii) number of main fixed telephone lines per 100 inhabitants; (iii) number of mobile subscribers per 100 inhabitants; (iv) number of wireless broadband subscriptions per 100 inhabitants; and (v) number of fixed broadband subscriptions per 100 inhabitants. The International Telecommunication Union is the primary source of data in each case.

The TII has remained largely unchanged since 2002, except for the replacement of online population with fixed-broadband subscription and the removal of number of television sets in 2008; the replacement of personal computer (PC) users with fixed internet subscriptions in 2012; and the replacement of fixed internet subscriptions with wireless broadband subscriptions in 2014.

### *Level of human capital (human capital index, HCI)*

Level of human capital incorporates two indicators on the acceptability of e-government services (adult (aged 15 and older) literacy rate and the percentage of school attendance) as a weighted average measure based on the human capacity report data along with data from UNESCO and the UNDP. The human capital index (HCI) consists of four components, namely: (i) adult literacy rate; (ii) the combined primary, secondary and tertiary gross enrolment ratio; (iii) expected years of schooling; and (iv) average years of schooling.

The first two components, that is, adult literacy rate and the combined primary, secondary and tertiary gross enrolment ratio, have been used in the past surveys since 2002. Recognizing that education is the fundamental pillar in supporting human capital, the 2014 Survey introduced two new components to the HCI, namely: (i) expected years of schooling; and (ii) mean years of schooling. The preliminary statistical study commissioned by Department of Economic and Social Affairs/Department of Public Administration organization in the past (DESA/DPADM) validated the use of the new HCI, accentuating that the two

new components have strengthened the HCI and do not introduce any error (UNDESA, 2014).

### *e-participation index (EPI)*

The e-participation index (EPI) is derived as a supplementary index to the UN e-Government Survey. It extends the dimension of the Survey by focusing on the use of online services to facilitate the provision of information by governments to citizens ("e-information sharing"), interaction with stakeholders ("e-consultation") and engagement in decision making processes ("e-decision making") as follows.

#### *Information provision index*

The official government policy of online participation of citizens required for induction takes into account participation opportunities associated with said information and determines if the known information is valid to provide basic information necessary. The electronic information provided is now used within a growing number of countries that try to use the three indicators of the most diverse forms of citizen participation services using the latest Web 2.0 as an item that is best run on the country's participation index.

#### *Policy participation index*

The electronic participation index is a measure of official online policy meetings, which includes the internet, blogs, chat, instant messaging, along with other channels that publish citizen opinion and feedback on how the government and civil inter-communication are valued by the citizens.

In the past, only 7 per cent of the member states participated in this index and thus it was the only area that lacked participation to obtain a score of 50 points or more. However, due to recent active use of SNS and mobile phones as a policy measure, more countries have started to participate in this index.

#### *Electronic decision index*

The electronic decision index deals with citizen participation and its results help in the decision making process and also in measuring the government's attitude towards citizen feedback. Since South Korea was first recognized in this field in 2010, it continues to maintain the highest electronic decision assessment level in the world.

## Analysis of changes to the UN e-government evaluation criteria

The United Nations has been pursuing a variety of changes in e-government evaluation methodology for nearly 20 years. In this process, the UN has made

assessments every two years since 2008. Accordingly, the changes and the main points of e-government evaluation from 2008 to present are briefly summarized as follows.

### *From e-government to connected governance (2008)*

Since 2008, the United Nations has attempted to address the problems of the existing web measure surveys and to take the following approaches for enhancing fairness and accuracy (UN, 2008, 219–221).

- *shorter survey window*
- *new questions/longer web measure survey for 2007–2008*
- *new probe questions/follow-on points*
- *general approach – perspective of the average citizen user*

### *Leveraging e-government at a time of financial and economic crisis (2010)*

The survey method underwent substantial change in 2010. In particular, it emphasized the role of e-government in overcoming the global economic crisis in 2009. Specifically, it focused on improving the transparency of the government by providing open data. Furthermore, recent e-government actions were discussed with possible solutions suggested for addressing employment, education, gender equality, health and environmental protection goals, which were five priorities of the Millennium Development Goals.

The biggest change in the survey method can be summarized as follows (Roche, 2017). First, the previous e-government readiness index was replaced with the new e-development index. This meant that the e-government level of the countries were moving beyond the introduction stage and proceeding to the development stage at that time. Second, the number of stages in the e-government development model was reduced from five to four. This involved the consolidation of different levels of online services, which were previously divided into partial online and full online (monetary transactions).

In the 2010 UN Survey, the index remained unchanged and consistent with the previous survey. At the same time, survey questions were adjusted as 25 questions were added to the survey instrument, 29 were modified and 16 were removed. The changes made in the practice of the survey are summarized as follows (UN, 2010, 111–112).

- *extension of the survey window*
- *enhanced citizen-centric approach*
- *identification of sites for review*
- *emphasis on interactive, transactional and integrated services*
- *international research team*
- *improved quality assurance*

### *E-government for the people (2012)*

In the 2012 Survey, the methodology did not show much difference from the past.[2] However, the 2012 Survey was unique in that it introduced new evaluation criteria for e-government. The content and evaluation criteria of the report in 2012 are as follows.

Specifically, Chapter 3 presents "Taking a whole-of-government approach" (UN, 2012, 55). Chapter 4 then describes "Supporting multichannel service delivery" (UN, 2012, 73). This shows that the emergence of mobile phones emphasized connections through more diverse means in the existing web-based e-government evaluation. In Chapter 5, "Bridging the digital divide by reaching out to vulnerable populations" is presented. In this chapter, the digital divide is explained in detail through the components and subcomponents of the conceptual map of the digital divide. It also explains the differences of language, literacy, education, age, disabilities, capacity, income, location and gender. Finally, Chapter 6 suggested various policy proposals for expanding usage to realize the full benefits of e-government.

Therefore, the main criteria of UN e-government evaluation in 2012 can be summarized as follows.

- *whole-of-government and one-stop service provision*
- *multichannel service provision*
- *accessibility of internet or mobile connectivity to all*
- *accessibility of service vulnerable groups*
- *user take-up and training*
- *accessing the environment*

### *E-Government for the Future We Want (2014)*

In the 2014 Survey, the methodology did not show much difference from the past.[3] The following is a summary of the contents of the 2014 survey report. Chapter 4 continues to emphasize the "Whole government and collaborative governance". More specifically, it describes key roles in the area of sustainable development, service delivery and government transformation. It also focuses on the authority and role of the CIO for establishing the organization's leadership and ensuring accountability.

Chapter 5 of the report describes mobile and other channels for inclusive multichannel service delivery. Specifically, it describes web, e-mail, SMS, mobile portals and mobile apps and also presents multichannel e-government strategies including BYOD (bring your own device). Chapter 6 continues the discussion on "Bridging the digital divide". Chapter 7 emphasizes the use of e-government in "E-Government for the post-2015 era: the usage perspective". Finally, Chapter 8 presents "Open Government data", which is based on the newly added questionnaire to the 2014 Survey.

Therefore, the main criteria of UN e-government evaluation in 2014 can be summarized as follows (UN, 2014).

- *whole-of-government approach*
- *multichannel service delivery*
- *e-participation*
- *digital divide and vulnerable group*
- *expanding usage*
- *Open Government data*

### *E-government in support of sustainable development (2016)*

Sustainable development is the keyword for UN e-government evaluation in 2016. This was also observed in the evaluation in 2014, but it was in the evaluation in 2016 that it was introduced in earnest. As the Millennium Development Goals (MDGs) the UN had been pursuing since 2000 were changed to Sustainable Development Goals (SDGs) in 2015, it became necessary to promote e-government in line with this. In other words, in order to pursue the MDGs in the past, a top-down strategy was driven by the government (MOI, 2015; UN, 2015). However, a bottom-up strategy is now required to pursue SDGs. Therefore, cooperative governance became necessary with an emphasis on citizen participation.

For e-government to support the realization of the Sustainable Development Goals, the 2016 assessment emphasized cross-governmental approaches, openness of public data, online participation and improved online services and addressing the digital divide. More specifically, the evaluation trends and major factors for 2016 are summarized as follows (UN, 2016).

- *expansion of public data provision type, expansion of method and quality, creation of added value by utilizing data*
- *emphasis on mobile government, including whether to use core public services mobile*
- *increasing need for disaster risk management using new technologies such as big data*
- *establishment of policy, a legal system, and guidelines related to cyber security due to data opening and the expansion of new technology*
- *consideration of cloud computing policy existence and possibility of infrastructure construction*
- *emphasis on electronic (digital) authentication systems (e-ID)*
- *emphasis on green government with green procurement (G2B)*
- *establishment of public–private partnerships such as crowdsourcing*

### *Gearing e-government to support transformation towards sustainable and resilient societies (2018)*

The 2018 UN e-Government Survey, *Gearing E-Government to Support Transformation towards Sustainable and Resilient Societies*, was launched on July

19, 2018 and considered the ways in which, using digital technology, governments can and are responding to shocks emanating from natural or man-made disasters and various types of other crises (UN, 2018).

The evaluation in 2018 was conducted in accordance with the 2030 Agenda, focusing on sustainability and resilience through e-government. Particularly, resilience is separately identified and analyzed in terms of e-resilience and resilience of e-government to cope with disaster. In the 2016 report, resilience was mentioned only three times, but in 2018 it was treated as a core concept across all areas.

In a 2018 ranking of countries on e-government development, Denmark, Australia and South Korea came out on top in a group of 40 countries, scoring very highly on the EDI, which measures countries' use of information and communication technologies to deliver public services.

In particular, in the 2018 UN evaluation, Denmark ranks in first place; in an independent assessment conducted by UNDESA on the provision of online services, Denmark also received the highest score. In 2016, Denmark announced its "Digital Strategy 2016–2020" and has been continuing to promote innovation in the public sector through interactions with the private sector. Denmark's Digital Strategy promotes a strong and secure digital Denmark (Agency for Digitisation, 2016).

The Danish government has also launched a policy to enable seamless digital connections between the government and citizens through digital divide mitigation. Along with the private sector, the public agencies of local, provincial and central government are taking advantage of the opportunities provided by digitization.

Australia ranked second in 2016 and 2018. Australia has been a leader in human capital development and ranked among the top ten in online services. The Australian government is working to deliver its Digital Transformation Agenda. Its Digital Transition Roadmap, published in November 2016, sets goals for the agenda and the government regularly updates snapshots of expected results. Based on these policies, Australia ranked second (Australian Government Digital Transformation Agency, 2017).

## Analysis of evaluation results in South Korea

Today, the UN e-Government Survey has profound implications in the promotion of digital government in South Korea, with the country ranking first in 2010 and then again in 2012 and 2014. As a result, South Korea is recognized as a leader in digital government. The evaluation of South Korea in the UN e-Government Surveys since 2010 was as follows.

### *2010*

In 2010 UN assessment, South Korea was ranked first of 192 countries for e-government. There were changes in 2010 evaluation rankings, where Sweden had been ranked twelfth compared to its position in first place in 2008; rankings

for Nordic countries including Denmark (from second to seventh) and Norway (from third to sixth) dropped significantly. By division, the telecommunications infrastructure index dropped by evaluating based on the number of internet users and mobile phone subscribers, and on the other hand the web measurement index for evaluating e-government websites increased rapidly to first place in 2010 from sixth place in year 2008 in South Korea. Therefore, the main cause of South Korea's top rating can be seen to be the improvement of the e-government website service level (Chung, 2015).

Each sector evaluation result is analyzed as follows. First of all, in the web measurement index, the UN evaluated Korea to have attained on average 78 per cent achievement in all four stages of the online service maturity model. In comparison with 2008, this shows significant progress made in interactive services and customized service for citizens, which is why South Korea ranked first place overall.

In the information and communication infrastructure index, due to the expansion of information and communications infrastructure in major developed countries, all indicators except the number of internet users dropped from tenth place in 2008 down to thirteenth place. This ranking drop may be owed to the popularization of the mobile phone, which caused a rapid decline in the numbers of landline telephone and prepaid subscribers; this reduced South Korea's specialty and negatively affected the total count of mobile phone subscribers. The human capital index had no major change compared to 2008 and was evaluated at seventh place.

On the e-participation index, in 2010 South Korea ranked first among 192 countries (compared to second place in 2008), which is considered proof of ensuring public participation opportunities online. While Spain (from position 34 to third), the United Kingdom (from position 25 to fourth) and Japan (from eleventh to sixth) rapidly improved their rankings, the United States, which had come first in 2008, fell five places to be positioned in sixth. Although the division implementation level somehow declined in South Korea compared to 2008, the promotion of online citizen participation using Web 2.0 services such as instant messaging and blogs improved its ratings.

### *2012*

After achieving the highest achievable score in 2010 in the UN e-Government Survey, South Korea once again won the top award in 2012, making it two consecutive wins. According to the results released on February 28, 2012, South Korea led overall in both online participation accounts of e-government development. Of the 190 countries surveyed, South Korea was followed by the Netherlands, the UK and Demark, while France moved to sixth, Sweden (second in 2010) came seventh and the US fell to fifth place. The results of the e-participation index were as follows: the Netherlands was tied for first place with South Korea; Singapore and Kazakhstan were tied for second place; the United States and the United Kingdom were tied for third place; Israel moved into fourth; and Spain (third in 2010) fell to position 14 on the list.

The 2012 e-government development index had an overall increase in all indicators from 2010. The indicators showed a higher average value by 0.4877 to 0.4406 points. This can be seen as efforts made by many countries having provided improved online services to meet the needs of their citizens. The increase by region was 0.7188 points for Europe, East Asia by 0.6344 points, North America by 0.8559 points, West Asia by 0.3464 points and Africa by 0.2762 points, which showed that a regional digital divide still existed.

### *2014*

South Korea achieved first place again in the 2014 UN e-Government Survey, proving that the UN officially acknowledged that South Korea had the world's top-level e-government, while at the same time providing the opportunity for South Korea's e-government to serve as the global standard. The UN announced the result of the Survey on June 23, 2014; South Korea had won first place both in the e-development index and the e-participation index.

The theme of the 2014 Survey – *E-Government for the Future We Want* – is particularly relevant to addressing the multifaceted and complex challenges that our societies face today. The publication addresses critical aspects of e-government for sustainable development articulated across eight chapters.

South Korea retained the top spot in 2014 due to its continued leadership and focus on e-government innovation. Australia (second) and Singapore (third) had both significantly improved upon their 2012 global rankings.

### *2016*

In 2016, South Korea ranked third after the United Kingdom and Australia, a two-place decline compared to its first-place score in the 2014 evaluation. Regarding each index, its online service index (OSI) score fell two places to fifth and its human capital index (HCI) score fell to position 18 due to reduced enrollment. South Korea's telecommunications infrastructure index (TTI) score remained in second place. In the e-participation index (EPI), South Korea fell by three positions to fourth place.

South Korea ranked in fifth place in the online service index, despite promoting services that focused on openness, sharing, communication and collaboration through the Government 3.0 policy as other countries provided more diverse channels and sophisticated services. In particular, many countries displayed substantial improvement in the online service sector of the whole-of-government approach. In the telecommunications infrastructure index South Korea ranked second, as it had in 2014, but its index value dropped from 0.9350 to 0.8530.

In the case of the human capital index, the components of the index had not changed since 2014 but South Korea fell sharply to position 18, with its index value also dropping from 0.9273 to 0.8795. This was due to the drop in overall enrollment rates and the drastic fall in university enrollment rates. In the e-participation index, the UK ranked first, Japan and Australia tied for second and

South Korea ranked fourth. The focus of the 2016 evaluation was e-participation in sustainable development.

### *2018*

South Korea ranked third after Denmark and Australia in the 2018 Survey and has thus maintained its leading status for five consecutive years since 2010. The details are as follows (Chung, 2019).

South Korea ranked third overall in e-government development, after Denmark (first) and Australia (second), the same as the results of the 2016 survey. Regarding the three indicators of the e-government development index, South Korea ranked fourth in the online service sector and third in the field of information and communication infrastructure. However, it ranked in position 20 in the field of human capital level.

Therefore, South Korea's third place ranking in the e-government development sector seems to have been caused by the fact that its college entrance rate, which is a component of the human capital index, is decreasing year upon year and is relatively low compared to competing countries; the number of students entering college fell from 83.8 per cent in 2008 to 68.9 per cent in 2017 due to nationwide changes in preferences, such as a preference to begin employment.

In the field of online participation, South Korea, Denmark and Finland were jointly ranked in first place. In the online participation category, the ranking increased significantly from fourth place in 2016 to first place in 2018. Particularly, online participation received 100 points in all three fields, including e-information, e-consultation and e-decision making.

According to the announcement of the United Nations, e-government cases such as "Korea's On-Line National Petition, Government 24,[4] National Participation Budget System (Chungcheongnam-do) and Open Data Portal" prove to be excellent examples of digital innovation (UN, 2018). Especially, South Korea's e-government is actively sought after by developing countries through e-government cooperation centres and invitation training.

## Policy implications

In general, the results of the United Nations e-government evaluation presented so far can lead to the following implications.

### *Continuous e-government promotion and the transition to digital government*

E-government has proven to be the most important policy implementation tool to achieve the UN's Sustainable Development Goals through the use of ICT. Therefore, it is necessary to elaborate e-government's role for socio-economic, environmental and sustainable development such as the development of universal service through enhanced integration and cooperation that narrows the digital divide across countries and the resolution of community problems using new

technology. It is also necessary to work closely with the United Nations to refine its current assessment methodology to continuously improve performance measurement and indicators for sustainable development.

At the same time, what is important for each country is that the transformation to digital government is accelerated through ICT-based public service innovation. Currently, the Fourth Industrial Revolution and innovative technologies such as big data, the internet of things (IoT), the cloud, supercomputing, geospatial data, broadband, artificial intelligence and deep machine learning are fused to discover new e-government services. As a result, the level of e-government is rapidly increasing in many countries. Therefore, in this process, introducing technology to the public sector should not be the goal but rather should pursue public and private cooperation to become an enabler for digital transformation. In particular, paradigm shifts in strategic thinking, legislation and regulation are essential for new technology utilization models to support the implementation of inclusive and sustainable development goals.

### *The need for a strong driving organization*

It is necessary to promote e-government from a whole-of-government perspective. Now, e-government projects are moving beyond the single-department information system. Therefore, there is a need for a dedicated organization that plans and manages e-government services and manages overall performance management at the government-wide level. As a result of the UN evaluation in 2018, Denmark, Australia and the UK achieved the highest rating of e-government service through continuous investment expansion based on a dedicated organization that plays a strong planning and coordinating role in e-government promotion.

Now, through the promotion of e-government, many countries in the world are rapidly moving towards digital government (Accenture, 2014; OECD, 2013). In particular, the Australian government is among the leading countries in the transition to digital government (Eggers and Joel, 2015). In order to implement digital government through digital transformation beyond e-government, establishing strong ICT governance is essential.

### *Promotion of an Open Government policy*

Efficiency and transparency should be ensured through public access to open data. Open data has been emphasized since the UN e-government evaluation in 2016.

On January 21, 2009, President Obama announced the MEMORANDUM on the theme of Transparency and OpenGovernment. The President 's first executive action, the Open Government Memorandum, calls for more transparent, participatory, and collaborative government. The Open Government Directive, released by OMB on December 8, 2009, requires executive departments and agencies to take the following steps toward the goal of creating a more open government:

1. Publish Government Information Online
2. Improve the Quality of Government Information
3. Create and Institutionalize a Culture of Open Government
4. Create an Enabling Policy Framework for Open Government

In 2011, the OECD published four guidelines: open access to government information, financial information, access to public information; assets of government officials, and the participation of the public in government.

The UN emphasized transparency and accountability of the administration by providing access to budget, legislative and judicial data, as well as information related to existing health and welfare such as labour and medical care. This policy trend continued in the evaluation of 2018.

### *Expansion of e-consulting and e-decision making*

E-participation is defined "as the process of engaging citizens through ICTs in policy, decision making, and service design and delivery so as to make it participatory, inclusive, and deliberative" (UN, 2016: 49). As in previous surveys, the 2018 Survey measures e-participation through the e-participation index (EPI) based on: (i) e-information – availability of online information; (ii) e-consultation – online public consultations, and (iii) e-decision making – directly involving citizens in decision processes. The Survey assesses the availability of e-participation tools on national government portals for each of the above criteria. It is noted in the 2018 Survey that more and more governments are encouraging citizens and businesses to collaborate by contributing ideas and providing feedback.

Therefore, more emphasis should be placed on online-based information provision, policy participation and integrated decision making processes. Since the division and boundaries of online participation phases are ambiguous, new multichannel-based information provision, policy participation and decision making should be implemented simultaneously via utilizing new information and communication technologies.

### *Extension of the utilization of new intelligence information technology*

Several rapidly advancing technologies have great potential, both for the ICT industries as well as for governments around the world. The 2018 Survey emphasizes the use of the following new intelligence information technologies (UN, 2018):

- data, intelligent apps and analytics
- artificial intelligence and robotic process automation
- intelligent "things", cyber–physical integration and edge computing
- virtual and augmented reality
- high-performance and quantum computing
- blockchain and distributed ledger technologies

Artificial intelligence constitutes a range of specific technologies through which intelligent machines are gaining the ability to learn, improve and make calculated decisions in ways that enable them to perform tasks previously thought to rely solely on human experience, creativity, and ingenuity. Artificial intelligence is the ability of a computer or a computer-enabled robotic system to process information and produce outcomes in a manner similar to the thought process of human beings in learning, decision making and problem solving.

Blockchain has potential public-sector application for record management, identity management, voting, taxes and remittances, and even blockchain-enabled regulatory reporting. Blockchain can equally be used to better manage development aid by enhancing security and transparency, as well as making international payments more accessible and easier to monitor.

The South Korean government has also established various e-government promotion strategies in response to the development of intelligent information technology (NIA, 2016; MOI, 2017b; MSIP, 2016); the "e-Government 2020 Basic Plan" was established in April 2016 (MOI, 2016) and in March 2017, the South Korean government announced the "Strategy for Intelligent Government" (MOI, 2017a). Currently, the South Korean government is looking for various ways to apply blockchain technology in the public sector.

## Case study: evolving definitions and understandings of e-government and its related development

| *Source* | *Definition of e-government* |
|---|---|
| *Benchmarking e-Government: A Global Perspective* (UNDESA, 2001) | "A tool for information and service provision to citizens" |
| *World Public Sector Report: e-Government at the Crossroads* (UNDESA, 2003) | What enhances the capacity of public administration through the use of ICTs to increase the supply of public value (i.e., to deliver the things that people want) |
| *United Nations Global e-Government Readiness Report 2004: Towards Access for Opportunity* (UNDESA, 2004) | What enhances the capacity of public administration through the use of ICTs to increase the supply of public value (i.e., to deliver the things that people want) |
| *United Nations Global e-Government Readiness Report 2005: From e-Government to e-Inclusion* (UNDESA, 2005) | The definition of e-government needs to be enhanced from simply "government-to-government networking" or "use of ICTs by governments to provide information and services to the public" to one which encompasses the role of the government in promoting equality and social inclusion |

| *Source* | *Definition of e-government* |
|---|---|
| *UN e-Government Survey 2008: From e-Government to Connected Governance* (UNDESA, 2008) | The continuous innovation in the delivery of services, public participation and governance through the transformation of external and internal relationships by the use of information technology, especially the internet |
| *UN e-Government Survey 2014: e-Government for the Future We Want* (UNDESA, 2014) | Can be referred to as the use and application of information technologies in public administration to streamline and integrate workflows and processes, to effectively manage data and information, enhance public service delivery, as well as expand communication channels for engagement and empowerment of people |
| Organisation for Economic Co-operation and Development (OECD) | "The use of information and communications technologies (ICTs), and particularly the internet, to achieve better government" |
| World Bank (2015) | Refers to government agencies' use of information technologies (such as wide area networks, the internet and mobile computing) that have the ability to transform relations with citizens, businesses and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth and/or cost reductions. |

Source: UN (2016, 143)

## Lessons learned: analysis of the top five countries in the 2018 UN e-Government Survey

1 Denmark

- "Digital Strategy 2016–2020" and strengthening digital efforts through public–private partnership
  - strategies that include private enterprises, trade organizations and NGOs, as well as executive organizations such as hospitals, schools and universities, in addition to central government agencies and public institutions
- mandatory government–citizen cooperation to minimize the digital divide and benefit from digitization of the private sector
  - recognizing public data as a driver of growth, actively promoting open data and smart city partnership policies

2 Australia

- emphasis on factors measured in the human capital index (first place)
- regularl management of the achievements of the Digital Transition Roadmap (November 2016)
- achievements of the Digital Transformation Office (DTO), a department dedicated to digital services under the prime minister's office

3 South Korea

- low score on the human capital index compared to the online service and ICT infrastructure indexes
- efforts to improve citizen satisfaction and improve government productivity; e-government provides convenient, efficient and transparent government implementation
- over the past ten years, 4,820 civil servants from developing countries have been educated in e-government development experience programmes

4 United Kingdom

- continuous improvement of integrated online service level through Gov.uk
  - Government Digital Strategy in February 2012, Government Transformation Strategy in February 2017
  - promotion of openness and transparency maximization strategies for all information and online participation based on "Open Standards" principles
- promotion of government innovation, human resource development and public service system through "Government Transformation Strategy 2017"

5 Sweden

- emphasis on factors evaluated in the human capital index and ICT infrastructure index
- implementation of a strategic plan focused on government digital policy in 2017 and sustainable government innovation
- excellent network penetration and excellent digital human resources
  - top-notch infrastructure built through a 2009 broadband strategy
  - expansion of broadband including mobile in accordance with the strategy of a "Completely Connected Sweden" from 2017 to 2025

## Notes

1 By the year 2005, six infrastructure indexes were used, but the number of online users and TV penetration rate was excluded, and the number of broadband subscribers was added, and is measured in five categories from 2008.

2 Regarding the telecommunications infrastructure index (TII), in the 2012 Survey, existing personal computer (PC) users were replaced by fixed internet subscriptions.
3 In relation to the telecommunications infrastructure index (TII), the 2014 Survey replaced the existing fixed internet subscriptions with wireless broadband subscriptions.
4 In South Korea, the official government portal (Gov.kr) provides Korean Government Services, civil petition services, policy and information. The provision of South Korean government services consolidates 70,000 different types of government services available to the public and classifies them into 12 categories. Korean Government Services provides customized services in a variety of ways that are tailored to each individual citizen's life. With Minwon Services, a citizen can access information on the competent authorities, required documents, fees, processing deadlines, related laws and regulations for over 5,000 types of civil petition online anytime, anywhere without physically visiting government agencies. Also, more than 300 of these services accept applications through mobile platforms. Regarding policy information, a citizen can access important news and policy information from government institutions including the central government, local governments and public institutions, in addition to policy, data, research reports, laws and statistical information.

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# Part III

# The development process and best practices in South Korea

# 6 The beginning and the development process of digital government in South Korea

## Introduction

South Korea has achieved one of the biggest leaps in digital government in the last 50 years. This has been due to the remarkable development of information and communication technology (ICT) in the country. In 1960, South Korea had a telephone penetration rate of 0.36 per 100 inhabitants, barely one-tenth of the then world average. By 1981, South Korea had caught up with the world average. Now, it leads the world in broadband internet access. South Korea is the leading example of a country rising from a low level of ICT access to one of the highest in the world.

South Korea's emergence as the world leader in ICT – in fields such as broadband internet, semiconductors and smartphones – has been no accident. The government had specifically targeted this objective. It is no coincidence that the period of most intensive investment in broadband infrastructure corresponded with recovery from the worst effects of the Asian financial crisis in the late 1990s. Again it was because the South Korean government specifically planned this, despite the general level of austerity imposed by IMF's conditions for their assistance.

After going through continuous efforts in e-government and national informatization, South Korea has become one of the global digital government leaders – obtaining the highest scores in the e-development and e-participation indexes, as discussed in Chapter 5; South Korea's e-development index ranking, as assessed by the United Nations, improved from position 15 in 2001 to first place in 2010 out of 192 countries worldwide, and its e-participation index ranking was also first in 2010, 2012 and 2014 (UN, 2010, 2012, 2014). In addition, many of South Korea's e-government practices up until now have been introduced to developing countries as best practices and have received worldwide acknowledgment.

In this chapter, therefore, I would like to examine the process of digital government development in South Korea from the 1990s onwards, chronologically, and in the order of presidential administrations. The analysis will proceed from two perspectives of digital government projects and government innovation. The contents and scope of this chapter are as follows.

- The Kim Young-sam administration (1993–1997)
- The Kim Dae-jung administration (1998–2002)
- The Roh Moo-hyun administration (2003–2007)
- The Lee Myung-bak administration (2008–2012)
- The Park Geun-hye administration (2013–2017)
- The Moon Jae-in administration (2017–present)

## The Kim Young-sam administration (1993–1997)

Kim Young-sam, who took office in February 1993, was the fourteenth president of South Korea. President Kim Young-sam promoted administrative reform and anti-corruption policies in the early days of his administration. Previously, all presidents had been from the military, so the Kim Young-sam government was the first general citizen government. The policies related to digital government during the Kim Young-sam administration can be summarized as follows.

- establishment of the Ministry of Information and Communication (December 1994)
- construction of high-speed information communication infrastructure (March 1995)
- enactment of the Framework Act on Informatization Promotion (August 1995)
- establishment of the Basic Plan for the Promotion of Informatization (June 1996)

### *Establishment of the Ministry of Information and Communication (December 1994)*

In the early 1990s, the era of government innovation and information super highways in various countries was at a boom. The South Korean government also recognized the importance of using information technology to improve government innovation and administrative services at this time. It also recognized the need for a dedicated ministry to promote the information industry while responding to the information society.

Accordingly, the South Korean government reorganized the existing Ministry of the Post Office in December 1994 and established the Ministry of Information and Communication. The role of the Ministry of Information and Communication was to formulate and coordinate national social informatization policies, to establish and manage high-speed information and communication networks, to protect information security, to establish licences for telecommunications carriers and to establish and manage policies on broadcasting.

After the establishment of the Ministry of Information and Communication, various information policies that had previously been divided into various ministries were concentrated into one department and exerted great power. As the

budget and authority were concentrated in the Ministry of Information and Communication, top-quality public officials also joined the Ministry.

This integration resulted in enhanced expertise and efficiency gains, in addition to a greater policy consistency. Up until its abolition in 2008, the Ministry of Information and Communication played a key role in transforming South Korea into the powerhouse of information and communication it is today. The Ministry is credited with having successfully accomplished the commercialization of the world's first code-division multiple access (CDMA) mobile communication service, the establishment of a high-speed broadband internet network, national informatization and the fostering of the information communication industries (Ministry of the Interior and Safety, 2017).

### *Construction of high-speed information communication infrastructure (March 1995)*

In 1993, the National Information Infrastructure (NII) plan was announced in the United States, with President Clinton declaring that "the future destiny of the United States depends on the construction of the national information infrastructure" (Information Infrastructure Task Force, 1993). The EU also pursued the construction of the Trans European Network (TEN) in earnest. In addition, countries around the world promoted technology development projects related to information communication infrastructure as national strategic projects.

In this situation, South Korea also started working on a basic plan for building a high-speed information communication network and published it in March 1994. Subsequently, in March 1995, the South Korean government finalized and announced the "Comprehensive Plan for the Establishment of a Broadband Information and Communication Infrastructure". The plan was to invest about $4 billion into an "information highway" that could transmit various types of information such as voice, data and video in real time, and to complete construction by 2015. This was the single largest government project in the history of South Korea.

With the explosion of internet users and the rapid development of information and communication technologies, there has been a need for early upgrading of information and communication networks. Therefore, the overall project period was divided into the Information Communication Network Enhancement Plan (September 1997) and the High-Speed Information Network Improvement Basic Plan (May 2001). The original target was 2015, but in 2003, the South Korean government announced the completion of the construction of a high-speed information and communication network.

This project involved three private telecom companies, and the number of broadband subscribers increased as communications charges dropped through competition. As a result of the competition among the three companies, South Korea's high-speed internet charge was the cheapest in the world. From 2000 to 2005, South Korea was the country with the highest rate of broadband internet users among OECD countries, and is one of the fastest internet countries to date.

Therefore, the construction of such a high-speed information communication infrastructure was the first step in South Korea becoming a leading nation of digital government.

### *Enactment of the Framework Act on Informatization Promotion (August 1995)*

The Framework Act on Informatization Promotion was enacted in August 1995 and enforced on January 1, 1996, and is the basic law of the information legal system in South Korea. The Act provides the legal and institutional arrangements necessary to effectively carry out informatization policies. The purpose of this law was to promote the adoption of information technology, the infrastructure of the information and communication industry and the construction of a high-speed information and communication network, and it was promoted by the national government in a consistent and efficient manner across the whole country.

This law encompasses government policies, promotion systems and information infrastructure for promoting informatization and provides the legal basis and ideological orientation for each area. With this law, South Korea has established an institutional basis in the field of digital government. The main contents of this law are as follows:

- purpose (Article 1)
- definitions (Article 2)
- establishment of the Informatization Promotion Committee (Article 8)
- function of the Committee (Article 9)
- creation of the Informatization Promotion Fund (Article 33)

### *Establishment of the Basic Plan for the Promotion of Informatization (June 1996)*

In June 1996, the South Korean government announced the Basic Plan for the Promotion of Informatization (1996–2000). This was a government-led national informatization plan, which was organized by the Ministry of Information and Communication and brought together the information promotion plans of the ministries. According to the Basic Plan for Promotion of Informatization, the policy areas for promotion of informationization in South Korea were divided into four areas: promotion of information, creation of infrastructure for information and communication industry, construction of a high-speed information network and improvement of social conditions.

In addition, in order to make South Korea a leading country in information technology, a vast project plan was established for each sector. The plan set out the goals and strategies for promoting informatization by 2010, and presented a comprehensive plan for the government to concentrate on the first phase of the period from 1996 to 2000. To accomplish this, the government selected ten

major tasks for promoting informatization. The top ten tasks for promoting IT cover almost all fields from government, education, academic research, industry, traffic logistics, local informatization, medical, environmental, safety management and defense to e-government:

1. small but efficient e-government implementation
2. establishment of an educational informatization base for training information society human resources
3. creation of an environment to utilize academic and research information for an advanced knowledge base
4. strengthening of companies' competitiveness through the promotion of industrial informatization
5. improvement of the utilization of social overhead capital facilities through informatization
6. support of local information for balanced regional development
7. improvement of medical service utilizing information technology
8. informatization of environment management for comfortable living
9. establishment of a national safety management information system for national disasters
10. establishment of an advanced diplomacy and defense information system

## The Kim Dae-jung administration (1998–2002)

Kim Dae-jung, who took office in February 1998, was the fifteenth president of South Korea. President Kim Dae-jung, who took office during the East Asian economic crisis that began in late 1997, made every effort to overcome the financial crisis at the beginning of his term. Specifically, the administration focused on restructuring measures such as financial reform and labour reform. Therefore, information policy and e-government were not adopted as part of the national agenda in the earlier years. However, as the hardware approach reforms that persisted for two years were exhausted, the Kim Dae-jung government turned to software approach reforms in 2000. The most important means at this time was the promotion of e-government. The policies related to digital government in the Kim Dae-jung administration can be summarized as follows.

- information policy highlighted in the millennium New Year Message (January 2000)
- the establishment of an e-government promotion committee – upgrading e-government to the presidential agenda (January 2001)
- enactment of the e-Government Act (July 2001)
- the establishment of e-government infrastructure – 11 projects completed (November 2002)

### *Information policy highlighted in the millennium New Year Message (January 2000)*

President Kim Dae-jung was illiterate about computers and the internet. Nonetheless, he emphasized the importance of informatization whenever he had the opportunity. He knew that information policy was very important nationally, even if he was himself computer-illiterate. Therefore, he emphasized informatization policy to all ministries even when receiving reports of the ministries' work every year.

In the new millennium, information policy was presented as part of the national agenda in the New Year Message. Specifically, the president addressed the idea that all citizens would make the best use of computers and build South Korea into a world-top-ten information power country.

> Honorable and loving people! The new millennium of hope has begun …
>
> My fellow Koreans! The twenty-first century is a time of globalization, digitization and knowledge-based. It is an age when competitiveness based on knowledge and information is more important than natural resources. The digital age is the age of the speed of light. If we adapt to these changes, we will become a first-class nation, and if we do not, we will fall into a third-rate country …
>
> The twenty-first century is the age of knowledge information. The government will do our best to make us into one of the world's top-ten knowledge intelligence power countries by working hard together with all of you. To this end, the government intends to complete the high-speed network that was targeted for 2010 by early 2005. Prior to this, the government will develop next-generation internet, which is 1,000 times faster than current information distribution speeds …
>
> Education on e-commerce via the internet should be commonplace. The government will create an environment in which the internet can be used as easily as the telephone. The government will complete the "Education Information System Master Plan", which was aimed for 2002, this year. To this end, the government will establish a high-speed network in all elementary, middle, and high schools …
>
> (Kim Dae-jung, Presidential New Year Message, January 3, 2000)

### *The establishment of an e-government promotion committee – upgrading e-government to the presidential agenda (January 2001)*

The Special Committee for e-Government was formed in January 30, 2001 to coordinate inter-agency collaboration in information sharing across agencies and to complete the infrastructure for e-government within a reasonable time frame. The Special Committee for e-Government was established as a special committee under the Presidential Commission on Government Innovation,

which is an executive branch of the presidency (Special Committee for e-Government, 2003).

Therefore, the Special Committee for e-Government reported to the president as an independent body. The main structure of the Special Committee for e-Government was based upon the committee's working-level group, which consisted of civilians and directors of agencies. To support the working-level group, two working-level co-heads were appointed. Various task force teams were formed within the Special Committee for e-Government to coordinate the many issues that surfaced among the government agencies. A team for system integration was appointed to set a compatible standard for the links between the systems developed for the 11 e-government initiatives.

The Special Committee for e-Government completed the 11 major e-government initiatives to meet the needs of citizens and private businesses by 2002. The committee formulated a comprehensive framework for building an effective e-government. To ensure that the special committee successfully carried out these tasks, the following measures were established.

First, a meeting for monitoring the progress of each e-government initiative was held weekly and issues upon which agencies were divided were negotiated and coordinated. Second, a standard method of interconnecting the different e-government projects was set early and implemented across agencies. Third, the judicial and legislative framework supporting the e-government initiatives was set in place before internet-based government services began.

### *Enactment of the e-government Act (July 2001)*

After President Kim Dae-jung's millennium New Year message of 2000, e-government became part of the national agenda. Subsequently, in March 2000, the Ministry of Government Administration and Home Affairs reported that the government would enact e-government laws while reporting to the president. Until this time, no nation in the world had ever enacted a single law related to e-government, but the Kim Dae-jung government prepared to do so. The law was drafted in June 2000[1] and completed the legislative process in the autumn of 2000. The law was promulgated in March 2001 and came into force in July 2001.

The main details are as follows. First, the Act listed the basic principles for the implementation of e-government policy; second, it described the provision and utilization of e-government services (including electronic processing of civil services); third, it laid out the construction and utilization of hubs for e-documents, administrative digital signatures, and the construction and utilization of a common infrastructure system; fourth, it addressed the adoption and utilization of information technology architecture and laid the groundwork for efficient management of information resources; fifth, it detailed the pre-consultation process for the implementation of the e-government projects, performance analysis and diagnosis, international cooperation, designation of a dedicated agency etc. (MOIS, 2017, 50).

The main contents of the e-Government Act are as follows:

purpose (Article 1)
definitions (Article 2)
principles of electronic government (Article 4)
application etc. for electronic processing of civil petitions (Article 7)

***The establishment of e-government infrastructure – 11 projects completed (November 2002)***

The Kim Dae-jung government formed a Special Committee for e-Government under the direct control of the president and, since 2001, promoted 11 e-government initiatives over two years, as follows.

1. the Government for Citizens (G4C) system
2. the Government e-Procurement System (GePS)
3. the Home Tax Service (HTS)
4. the Social Insurance Information Sharing System (SIIS)
5. the Local Government Information Network System Project
6. the National Education Information System (NEIS)
7. the Personnel Policy Support System (PPSS)
8. the National Finance Information System (NAFIS)
9. e-approval and e-document exchange
10. the e-signature and e-seal system
11. a government-wide integrated computer network

As a result of these efforts, President Kim Dae-jung held a meeting for the "Report on the Completion of e-Government Infrastructure" on November 13, 2002 with all ministers from each participating ministry in attendance. President Kim announced that the 11 major e-government initiatives had been successfully executed and declared the opening of full-scale e-government services.

## The Roh Moo-hyun administration (2003–2007)

Roh Moo-hyun, who took office in February 2003, was the sixteenth president of South Korea. President Roh Moo-hyun had extraordinary insights into and understanding of the fields of information policy and e-government. Therefore, the Roh Moo-hyun government started to look very different from the previous governments. From the early days of his administration, he strongly pursued information policy and e-government projects, with personal leadership. Today, South Korea has the highest position in the world in the field of digital government because of the accomplishments of the Roh Moo-hyun administration. Its policies related to digital government can be summarized as follows.

- strong implementation from the beginning of the regime
- establishment of the Presidential Committee (April 2003)
- e-Government Project Roadmap (2003–2007)
- linking of information technology projects with government innovation

### *Strong implementation from the beginning of the regime*

Prior to the Roh administration, both the Kim Young-sam and Kim Dae-jung governments implemented information policy and digital government-related projects in the latter half of their administration. Given the typical loss of power in the latter half of a ruling party's term, it was difficult to receive firm support for policies that were pursued so late. Therefore, it can't be said that these administrations recognized the importance of information policy and digital government promotion in a timely manner.

However, the Roh administration made a totally different start; as soon as it took office it selected five major national agendas, one of which was e-government. As a result, e-government was recognized as a presidential project from the beginning and had a strong driving force. On the basis of this, the Roh Moo-hyun government established a clear vision and strategy for e-government and linked it to the national ideology at the beginning of the term. The Roh Moo-hyun government's vision and goals for e-government were as follows (PCGID, 2007).

The firm resolve of the participatory government gave birth to the e-Government Project Roadmap, which aimed to realize South Korea's vision of becoming the "world's best open e-government" (PCGID, 2007) and was largely made up of the following two goals.

First, the phrase "the world's best" referred to the realization of South Korea as the world's primary nation in the area of ICT.

Second, "open e-government" referred to the vision of a true participatory democracy realized by participation of the people in policy formulation and government administration processes through transparent public administration. These two components in realizing "the world's best open e-government" would greatly help the South Korean effort to rise to the level of advanced nations in both political and administrative landscapes. It also led to three very concrete concepts for e-government.

- the establishment of a network-based government through the innovation of public service delivery
- the realization of a knowledge-based government through transparent and efficient public administration
- the realization of a participatory government through true democracy

The three major goals for achieving this vision were:

- reform of government administration: the replacement of paper document processing with electronic document processing methods, while stand-alone

government information systems would be integrated into a one-stop information system
- reform of citizen service delivery: citizens should no longer need to visit government offices to receive civil services but instead be able to conveniently access government services through a single online window
- reform of information resource management: information resources such as human resources, organization, budget and information systems, which were managed separately by the respective agencies in the past, would be integrated across the government by using a common standard to ensure interoperability among systems

In addition to these goals, the government set target ranks for key performance indexes provided by international organizations such as the United Nations (UN), Transparency International (TI) and the International Data Corporation (IDC).[2]

### *Establishment of the Presidential Committee (April 2003)*

Upon his inauguration in 2003, President Roh prepared policy measures to further develop national informatization and e-government projects promoted by previous administrations. In April 2003, to promote government innovation in a more comprehensive and systematic way, the Presidential Committee on Government Innovation and Decentralization (PCGID) was established to deal with such issues as e-government, administrative reform, local decentralization and tax reform.

The Roh Moo-hyun government's e-government was promoted by the e-government special committee under PCGID. Under PCGID, this committee carried out the development, deliberation and coordination of the e-Government Project Roadmap projects during their initial stages. The Ministry of Government Administration and Home Affairs (MOGAHA) provided administrative assistance while the National Information Society Agency (NIA) conducted project management along with technical advice. Each government agency was assigned to perform and implement plans that were designed by the committee.

With the necessity to strengthen the authority and position of the responsible ministry constantly being raised for efficient and responsible e-government implementation, the development, coordination and management of e-government projects were performed by MOGAHA as the projects entered into full-scale implementation. The Special Committee on e-Government focused on advising and evaluating e-government projects.

Therefore, the implementation of e-government projects by the Roh Moo-hyun government was carried out by the Presidential Committee on Government Innovation and Decentralization (PCGID). In this way, the promotion of e-government in the Roh Moo-hyun government was pursued as a presidential agenda of the president's direct organization. At the same time, a senior-secretary

position for innovation management, in charge of government innovation and e-government, was created in the presidential office. Therefore, the Roh Moo-hyun government pursued e-government policies in cooperation with the presidential office and the Special Committee on e-Government under PCGID.

### *e-Government Project Roadmap (2003–2007)*

On August 14, 2003, the "Roh Administration e-Government Vision and Principles" were announced, followed by the "e-Government Project Roadmap". The e-Government Project Roadmap was composed of four areas of innovation, ten agendas and 31 projects, as follows (MOGAHA, 2006, 12–34).

(1) digitalizing document processing procedures
(2) comprehensive informatization of national and local public finance
(3) realizing local e-government
(4) building an e-auditing system
(5) realizing e-national assembly
(6) building an integrated criminal justice service system
(7) comprehensive informatization of HR management
(8) building an e-diplomacy system
(9) real-time management of the national agenda
(10) expansion of administrative information sharing
(11) developing a government business reference model
(12) enhancing internet-based civil services
(13) developing an integrated national disaster management service
(14) building an advanced architectural administration information system
(15) the creation of an integrated tax service
(16) the creation of an integrated national welfare service
(17) the creation of a comprehensive food and drug information service
(18) the creation of a comprehensive employment information service
(19) the creation of an internet-based administrative judgement service
(20) development of a single-window for business support services (G4B)
(21) the creation of an integrated national logistics information service
(22) the creation of an e-commerce service
(23) the creation of a comprehensive foreigner support service
(24) developing support for exporting e-government solutions
(25) increasing online citizen participation
(26) building a government-wide National Computer Integrated Center
(27) strengthening the e-government communications network (e-gov net)
(28) establishing a government-wide ITA
(29) building an information security system
(30) restructuring informatization organizations and personnel
(31) reforming the legal system for e-government and security

These 31 e-government projects continued to be implemented based on the Roadmap for five years from 2003 to 2007. A total of $800 million was invested in these 31 projects for five years. These projects have been carried out through the implementation of numerous information systems and the basis for government innovation through systems were established. President Roh Moo-hyun attended the e-government completion ceremony on September 19, 2007 and declared that South Korea's e-government base had been completed and that it had become a leading country in digital government.

### *Linking of information technology projects with government innovation*

The Roh Moo-hyun administration, which took power in February 2003, proclaimed a "participatory government". The participatory government was made possible by electronic citizen participation. Therefore, the Roh Moo-hyun government emphasized systematic institutionalization of citizen participation through e-government during its five-year term.

In order to promote administrative reform, the government established the Presidential Committee on Government Innovation and Decentralization (PCGID) under the president and organized five professional committees to manage such major innovation projects as administrative reform, personnel administration system reform, decentralization, finance and tax system reform and the promotion of e-government.

What is important here is that President Roh Moo-hyun frequently emphasized and supported PCGID while he chaired the national agenda meeting during his five-year term in office. Therefore, PCGID was able to strongly promote administrative reforms based on the president's confidence and e-government was utilized as a means of the administrative reforms.

The Roh Moo-hyun administration's vision of administrative reform was set as a "government that works well with the people". The goals for achieving this were efficient administration, service-oriented administration, transparent administration, participatory administration and clean administration (PCGID, 2007, 32–67).

Therefore, as all these national agendas were promoted as e-government projects, e-government became the most important means of administrative reform in the Roh administration. In terms of administrative reform, there was considerable progress in strengthening administrative control of performance and competition. Furthermore, the transparency and impartiality of the administration were remarkably improved by the anti-corruption activities such as the sharing of data and disclosure of information. As such, the Roh Moo-hyun government was able to succeed because the projects of e-government were strongly promoted alongside administrative reforms and not simply as part of a standalone systems implementation project.

## The Lee Myung-bak administration (2008–2012)

Lee Myung-bak, who took office in February 2008, was the seventeenth president of South Korea. The Lee Myung-Bak administration emphasized the "lost

decade" with its inauguration. This meant the start of the conservative government, ending the progressive regime of the past decade. Therefore, through the regime change from a government to a conservative government over 10 years, all the past government policies were abolished. The most damaging of these was done to e-government policies. In addition, the Ministry of Information and Communication, which had played a major role in bringing South Korea to the world level in the field of information and communications, was dismantled and the functions of the Ministry were divided into four and transferred to other ministries. In particular, the Lee Myung-bak administration banned the use of the e-government term from the beginning and replaced it with the term "national informatization". Therefore, government innovation using information technology disappeared and business-friendly policies emerged. The policies related to digital government in the Lee Myung-bak government can be summarized as follows.

- abolition of the Ministry of Information and Communication (February 2008)
- establishment of new ICT governance (November 2009): the Presidential Council on Information Society
- the Smart Government Implementation Plan (2011)
- conversion of information policy through regime change: pursuing business-friendly policies without resorting to government innovation

### *Abolition of the Ministry of Information and Communication (February 2008)*

The Ministry of Information and Communication (MIC) had established and managed the national social information policy, the high-speed information network and information protection, and had dealt with licences for telecommunication operators, the establishment and management of policies on radio airwaves and broadcasting, the postal service, postal money orders and postal transfers.

The MIC had been established to reorganize the Ministry of Communications on December 23, 1994, and was abolished on February 28, 2008. Following its establishment, the MIC had played a pivotal role in integrating the information and communication tasks that had previously been handled by various individual ministries.

This integration had resulted in enhanced expertise and efficiency gains, in addition to a greater policy consistency. Up until its abolition in 2008, the MIC had played a key role in transforming South Korea into the powerhouse of information and communication it is today. The Ministry is credited with having successfully accomplished the commercialization of the world's first code-division multiple access (CDMA) mobile communication service, the establishment of a high-speed broadband internet network, national informatization and the fostering of the information communication industries (MOIS, 2017, 44).

In February 2008, the Lee Myung-bak administration abolished the Ministry of Information and Communication (MIC) in its pursuit of a small and efficient

government and transferred its functions to four ministries, including the Ministry of Knowledge Economy, the Ministry of Culture and Sports, the South Korean Communications Commission and the Ministry of Public Administration and Security. The reason for the dismantling of the MIC is that the internet and information- and communications-related tasks were expanded and performed by all the ministries and not by any single ministry. However, after the dissolution of the MIC, South Korea confronted with extreme confusion and chaos regarding ICT policy. This was due to the confusion of concepts between ICT industry promotion, national informatization and e-government. In addition, the departments that the responsibilities had been newly transferred to were unable to function properly, resulting in complaints from companies in related industries.

### *Establishment of new ICT governance (November 2009): the Presidential Council on Information Society*

With the launch of the Lee Myung-bak government, the MIC was dismantled, and the function of national informatization was transferred to the Ministry of Public Administration and Security, integrating the functions of e-government and national informatization. In addition, as the existing government innovation decentralization committee was dismantled, a new ICT governance was needed.

In January 2009, the Lee Myung-Bak administration submitted the "Framework Act on National Informatization" to the National Assembly. The government proposed the reason for the proposal as "The governmental reorganization of the government in February 2008. As the information technology functions are dispersed to multiple departments and the paradigm of national informatization around the world changes from information promotion to information utilization, in response we are trying to contribute to the realization of knowledge and information society by presenting basic philosophy and principles of new national informatization and defining matters for establishment and promotion of relevant policies".

In accordance with the Framework Act on National Informatization, the Lee Myung-bak government established the Presidential Council on Information Society (CIS) under the president. The CIS served as the control tower for overseeing and coordinating national ICT projects (NIA, 2010, 18).

The CIS was the top authoritative body that deliberated on the national informatization master plan and action plans, adjusted relevant policies, fostered information culture and carried out projects for closing the digital divide, deliberated on mid- and long-term plans for knowledge information resource management and designated knowledge information resources. Moreover, it served as the national ICT control tower by developing and promoting a future-oriented policy agenda in order to lead the country to becoming an advanced knowledge information society.

### *The Smart Government Implementation Plan (2011)*

One of the most important strategies and plans of the Lee Myung-bak government in relation to digital government policy was the Smart Government Implementation Plan, announced in March 2011. The plan was to respond to the rapidly changing status of information technology in which the mobile environment evolved into smartphones and tablet PCs. In particular, as cloud computing became widely used, the policy environment of the digital government underwent a paradigm shift.

In particular, the South Korean government had the intention of using ICT to cope with social issues such as the low birth rate, the ageing society and global warming. In addition, there were also new demands for disaster management, social safety and welfare due to the increasing importance of social safety, the spread of the notion of caring for others and the sharing culture, and an increasing desire for social integration through the resolution of social polarization in the future society.

Although South Korea had transformed itself into a country with the world's best e-government as stated above, its human and technical infrastructure was weak due to the provider-centred and government-led nature of its IT projects, the inefficient operation of its information resources, security accidents and the unbalanced growth of IT businesses.

Given this situation, the vision of the Smart Government Plan was to "realize the world's best e-government in tune with the people". To this end, the goals of being the "global e-government leader" and the provider of the "world's best e-government services" were set. The five agendas and details to achieve this are summarized as follows (MOPAS, 2011). South Korea had the aim of having:

1. the world's best mobile e-government
2. a safe and warm-hearted society
3. smart work aimed at balancing professional and personal lives
4. communication-based customized service to citizens
5. e-government infrastructure with sound foundations

### *Conversion of information policy through regime change: pursuing business-friendly policies without resorting to government innovation*

President Lee Myung-bak, who was appointed as the seventeenth president of South Korea in 2008, was a business person. The reason why the South Korean people chose a president with private-sector experience was their desire to revitalize the economy. He joined the Hyundai Group in 1965 and worked there for 27 years. Therefore, most of his life he worked in construction fields such as roads, bridges and buildings. This resulted in a focus on social overhead capital (SOC) projects, such as building dams and roads, rather than invisible information policies when he later became president. During his presidency, he conducted

the Grand Korean Waterway Project, a proposed 540-kilometre (340-mile) canal, traversing difficult mountainous terrain, connecting Seoul and Busan, two of South Korea's largest cities.

He also adopted the profitability point of view from the private sector to the public sector. As a result, the number of institutions reduced by merging and integrating several departments along with the inauguration of Lee Myung-bak, and attempted downsizing while emphasizing efficiency within the ministry. This was not simply a reduction in the number of ministries and the number of public officials, but it also led to budget cuts in the field of information technology. Therefore, the budget for the IT sector under the Lee Myung-bak administration for five years was continuously reduced. President Lee Myung-bak attended informatization conferences and directly instructed the budget to be reduced by 20 per cent through the integration of information systems. The budget cut in the area of information policy was put into the Grand Korean Waterway Project.

President Lee Myung-bak was not an expert in the field of information policy. Thus, the field of information technology, including e-government, was hardly promoted in the early days of the administration. Therefore, many companies in the field of information and telecommunications at that time complained about business difficulties.

The biggest problem in the information policy of the Lee Myung-bak government was that it stopped the government innovation that had been going on under the previous governments. While the previous Roh Moo-hyun government had continued to pursue administrative innovation using information technology, the Lee administration promoted market-friendly policies based on the logic of economic efficiency. Government innovation and administrative innovation were not promoted as a national agenda. Therefore, e-government, which was the most important means of government innovation, was not properly promoted at the beginning. After the evaluation of e-government in 2010, smart e-government projects and smart work projects were promoted, but they were not upgraded to the level of national agenda or presidential projects.

In conclusion, during the Lee Myung-bak government, South Korea ranked first in the UN e-Government Survey in 2010, but this was probably due to the time-lag effects of the policy. In other words, the results of the evaluation in 2010 were favourable by measuring the performance of e-government projects implemented by the participating government from 2003 to 2008. As a result, the first-place accomplishment was not the Lee Myung-bak government's, but an achievement of the previous Roh Moo-hyun administration. The lesson learned from the Lee Myung-bak administration's example of e-government in South Korea is how to secure the sustainability of e-government policy regardless of regime change.

## The Park Geun-hye administration (2013–2017)

In February 2013, the launch of the Park Geun-hye administration did not involve a replacement of the political party but the inauguration of a new president from

the same political party. Nonetheless, there were great changes in the field of information policy. This was due to the backwardness of South Korean politics. In other words, although the new president was elected from the same party, many national policies including information policy were replaced upon the president's personal decision and not by the political party's policies. The Park Geun-hye government changed the information policy framework established under the former Lee Myung-bak government. Regarding the promotion of the digital government, the Park government pursued new policies, laws and governance as "Government 3.0".

The policies related to digital government in the Park Geun-hye administration can be summarized via the following subsection headings that continue this chapter.

- the establishment of a new department: the Ministry of Science, ICT and Future Planning (March 2013)
- the presentation of a new digital government policy: Government 3.0 (2013–2017)
- the Master Plan for e-Government 2020 (April 2016)
- the persistence of information policy is gone: a tragedy created by political rhetoric

### *The establishment of a new department: the Ministry of Science, ICT and Future Planning (March 2013)*

With regards to the government's restructuring following the inauguration of the new administration in 2013, many experts pointed out that abolishing the Ministry of Information and Communications and assigning its integrated ICT policy functions to multiple ministries in 2008 was a mistake. Amidst these criticisms, at the end of the Lee Myeong-bak administration, discussions about the ICT policy control tower or a dedicated ministry took place with the focus on promotion of the ICT industry, technology development and communication infrastructure as the main tasks for the next administration (NIA, 2015, 20).

As a result, the new administration created the Ministry of Science, ICT and Future Planning (MISP) to promote and oversee ICT. The MISP, as the key ministry of the Park Geun-hye administration, oversaw science/technology and ICT with the aim of identifying future growth engines and creating jobs. Its responsibilities included science and technology, ICT, R&D, industry–academia cooperation and the postal service. Under the Minister of Science, ICT and Future Planning, two assistant ministers (one responsible for science and technology policy and R&D and the other for ICT) were appointed. The assistant minister in charge of ICT was responsible for the broadcasting and communication convergence function transferred from the existing South Korea Communications Commission, the national informatization function transferred from the MOSPA, the digital contents function transferred from the Ministry of Culture, Sports and

Tourism and the software promotion function transferred from the Ministry of Knowledge Economy.

Yet the national informatization implementation system faced more changes in order to conform to the aims of government restructuring. As the national informatization function was transferred to the MISP, the President's Council for Informatization Society (CIS) was abolished under the Framework Act on National Informatization and the Special Act on ICT Promotion and Convergence ("ICT Special Act") was enacted; the ICT Special Act was announced in August 2013 and it promulgated on February 14, 2014. The objective of the ICT Special Act was to improve the international competitiveness of ICT by stipulating policies for promoting ICT industry convergence based on ICT, to enhance the regulations and develop manpower, to support venture cultivation and R&D as well as to contribute to improving the quality of life by seeking continuous development of the national economy.

The law specified the formation of the ICT Strategy Council as the supervising body. Under the provisions of the ICT Special Act, the ICT Strategy Council was chaired by the prime minister for deliberation and decision on policies for the promotion and convergence of ICT.

### *The presentation of a new digital government policy: Government 3.0 (2013–2017)*

On July 11, 2012, presidential candidate Park Geun-hye announced the government's Government 3.0 initiative as its first pledge for the presidential election. After the election, on February 21, 2013, the 18th Presidential Transition Committee announced a strategy to achieve Government 3.0 through openness and sharing. On July 25, 2014, the Government 3.0 Promotion Committee was established under the prime minister.

The Park Geun-Hye administration embraced Government 3.0 as a new paradigm and set the deployment of Government 3.0 as a major goal of state affairs. The notion of Government 3.0 goes beyond what the technological potentials of Web 3.0 promise. The Park administration envisioned Government 3.0 for the purpose of building a new age of hopes and happiness for all South Koreans. The Government 3.0 vision presented by the Park administration was a new government management paradigm that discloses and shares public information for communication with citizens and encourages cooperation regardless of organizational boundaries. After the start of the new administration, the government implemented Government 3.0 by providing services customized to citizens' needs, encouraging collaboration among government agencies and utilizing big data.

The South Korean Government 3.0 drive sought two high-level goals: providing services customized for and tailored to various needs and demands and creating new jobs and boosting development engines. For these two goals, the South Korean government presented three strategic directions: service-oriented government, transparent government and better (and smarter) administration (in

other words, competent government). All these efforts were supported by four core values: openness, sharing, communication and collaboration.

### *The Master Plan for e-Government 2020 (April 2016)*

In 2016, the government established the "Master Plan for e-Government 2020" (2016–2020) to apply intelligent information technology to its e-government systems, in line with the rapidly changing ICT environment (MOIS, 2017, 90–91). In particular, the Master Plan proposed a new paradigm for the Fourth Industrial Revolution and a more responsive e-government agenda. In April 2016, the e-Government Promotion Committee was organized to deliberate on and confirm the Master Plan for e-Government 2020.

The Master Plan had three major characteristics. First, the basic direction of the e-government was oriented towards using intelligent information technologies (AI, IoT, cloud computing, big data and mobile) as the key instruments of government operation. Its goal was to expand private and public partnerships to include politics, society and government administration fields.

Second, the existing administrative services were transformed into more integrated and customized services that reflect the needs and complexity of each individual citizen. Third, the Master Plan was to contribute to social development based not only on government reform but also on a new ecosystem where the government, businesses, civic groups,and individual citizens are able to cooperate with each other. In addition, the plan included three key goals: delivering and realizing services catering to public demands, establishing an advanced and intelligent information-based administration and creating a sustainable "digital new deal" under its slogan "Enjoy your e-Government!"

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

The government drew up the "Action Plan for e-Government 2020" to give substance to the Master Plan. The Action Plan was created by taking into account the opinions of central ministries, local governments and private experts and was confirmed following a review by the e-Government Promotion Committee. For the five strategies (listed below), the government selected 12 major initiatives and 30 core projects to receive particular attention due to their feasibility, importance and urgency.

1. re-designing government services
2. achieving cognition and prediction-based intelligent administration
3. creating a new e-government ecosystem that co-exists with industries
4. expanding trust-based and future-oriented infrastructure
5. taking the lead in global e-government order

### *The persistence of information policy is gone: a tragedy created by political rhetoric*

President Park abolished the President's Council for Informatization Society (CIS), which had been formed during President Lee Myung-bak's term. In addition, the new administration did not continue the basis of the information policy that had been promoted by the previous administration. The Park Geun-hye administration pursued a new information policy called Government 3.0. Therefore, the previous information policy disappeared and was replaced by a newly promoted policy, causing chaos.

Because the President's Council for Informatization Society (CIS) was a law-based organization, it restructured governance by abolishing laws and creating new laws. The President's Council for Informatization Society (CIS) under the Framework Act on National Informatization was abolished and the ICT Special Act was enacted. The ICT Special Act was promulgated in February 2014. The reason for the abolition of the CIS was that too many committees had been created in the previous government and were now running out of control. However, there were many more ICT-related committees in the Park Geun-hye administration. As a result, there were conflicts among the committees regarding the division of work and authority, which made it difficult to implement information policies.

The details are as follows. In the Park Geun-hye administration, four committees on ICT were established and went into operation, namely the Open Data Strategy Council, the ICT Strategy Council, the Government 3.0 Promotion Committee, and the e-Government Promotion Committee. These ICT-related committees were operated independently of each other, causing the duplication of work. These ICT-related committees had legal differences on the basis of their establishment. The Open Data Strategy Council and the ICT Strategy Council, which had been established first, were based in the law. The Government 3.0 Promotion Committee, established later, was based on a presidential decree and the e-Government Promotion Committee was based on a Ministry of Government Administration and Home Affairs Directive.

The committee with the highest authority was the ICT Strategy Council. The ICT Strategy Council's work items covered almost all areas of the Open Data Strategy Council and the Government 3.0 Promotion Committee; it reviewed big data, ICT laws, systems, the data industry and IoT. The Open Data Strategy Council and the Government 3.0 Promotion Committee also shared a substantial number of covered areas. Government 3.0, on aggregate, was a provision of government-owned public information, that is, customized administrative services through data liberalization. The opening and sharing of information, which was regarded as an important basis of Government 3.0, had been continuously promoted by the South Korean e-government for the past 20 years. Therefore, the majority of the Government 3.0 promotion committee duties overlapped with the e-government promotion committee. Therefore, because all four committees

were promoting digital government policies, the ensuing duplication of work caused confusion.

In 2013, the Government 3.0 policy was not properly implemented. Thus, in the first half of 2014, the government began considering the establishment of a dedicated agency to promote Government 3.0. As a result, the Government 3.0 Promotion Committee was launched in July 2014. However, it had already missed the golden time at the beginning of the administration, and after it was established the driving force was weakened by conflicts with other ICT-related committees and the Ministry of Government Administration and Home Affairs. As such, the policy of Government 3.0 was not differentiated from e-government, and its identity was unclear, so it disappeared through the failure of the Park Geun-hye administration. In the end, the Government 3.0 policy that had been pursued by the Park Geun-hye administration was regarded as mere political rhetoric (Chung, 2018).

## The Moon Jae-in administration (2017–present)

Moon Jae-in, who took office in May 2017, was the nineteenth president of South Korea. Moon Jae-in was elected through a presidential election in which the former president had been impeached and the presidency was unoccupied. Thus, the Moon Jae-in administration was unable to form the presidential transition committee that the other presidents all had. Instead, on May 16, 2017, the National Planning and Advisory Committee was established and began its operation. On July 19, 2017, the National Planning and Advisory Committee selected 20 national strategies and 100 national agendas and announced a five-year plan for national vision and state administration. Today, the Moon Jae-in administration is ongoing. Therefore, it is premature to evaluate the Moon Jae-in government's information policy. However, the current information policy for the digital government of the Moon Jae-in administration can be summarized as follows.

- establishment of the Presidential Committee on the Fourth Industrial Revolution (August 2017)
- the Intelligent Government Basic Plan (2017–present)
- the Sixth National Informatization Master Plan (December 2018)
- changes in ICT policy through regime change: not combining government innovation and ICT

### *Establishment of the Presidential Committee on the Fourth Industrial Revolution (August 2017)*

The Moon Jae-in administration established the Presidential Committee on the Fourth Industrial Revolution (PCFIR) in the direct office of the president in order to respond to the overall changes caused by the advent of the Fourth Industrial Revolution. The PCFIR deliberates upon and coordinates important

policy matters pertaining to the development and acquisition of new science and technology, including artificial intelligence (AI) and data technology as well as new industries and services necessary for South Korean society's adaptation to the Fourth Industrial Revolution. The committee's legal basis can be found in the Presidential Decree on the Creation and Management of the PCFIR, promulgated and effective as of August 22, 2017.

The composition of the PCFIR consisted of one chairperson, five ministers of ICT-related ministries (Science and ICT; Trade, Industry and Energy; Employment and Labour; SMEs and Startups; Land, Infrastructure and Transport) and 25 members including academics and industry experts. The PCFIR has organized three subcommittees on regulatory innovation in government affairs. In addition, the PCFIR operates on two special subcommittees to ensure thorough discussions on various issues related to the Fourth Industrial Revolution, including smart cities and healthcare.

PCFIR held its second meeting on November 30, 2017 and announced the "The People-Centred Response Plan for the Fourth Industrial Revolution to Promote Innovative Growth". This plan is a concrete blueprint for the government to promote a "human-centred Fourth Industrial Revolution" that supports "innovation growth", the core policy task of the Moon Jae-in administration.

### *The Intelligent Government Basic Plan (2017–present)*

In March 2017, the South Korean government announced the Intelligent Government Basic Plan. This is because the administrative environment for implementing digital government largely changed due to intelligent information technology. First, the combination of digital data and artificial intelligence technology has made it possible to improve the rationality of administration, scientific quality and customized services according to area, class and situation. In particular, South Korea has unlimited potential because of the accumulation and use of large amounts of digital data in administrative areas through continuous e-government promotion.

Second, future e-government should use artificial intelligence and data beyond the existing online-oriented service implementation and become the personal secretary of the public and public officials to support rational judgement in real time. In addition, it is necessary to develop digital government so that the people can access it anywhere through its provision of detailed offline service that is connected with real life. The vision, goals and specific implementation strategies of the Intelligent Government Basic Plan can be summarized as follows.

Intelligent e-government is aiming for a new digital government that uses intelligent information technology to optimize government services, innovate a way of working on its own and realize a safe and comfortable society by running state administration together with the people. To this end, intelligent government aims to achieve its vision of "self-evolving WISE Government" based on six core values (fairness, transparency, flexibility, trust, creativity and tolerance).

Intelligent e-government is pursuing four main goals and 14 strategies, four of which are:

1. wonderful mind-caring government
2. innovative problem-solving government
3. sustainable value-sharing government
4. enhanced safety-keeping government

### *The Sixth National Informatization Master Plan (December 2018)*

On December 14, 2018, the ICT Strategy Council deliberated upon and finalized the Sixth National Informatization Master Plan. The National Informatization Master Plan, which is established every five years in accordance with the Framework Act on National Informatization, provides mid- to long-term directions and strategies for overall national informatization.

The information policy of Moon Jae-in administration is summarized as a response to the Fourth Industrial Revolution and hyper-linked intelligence. Therefore, the main contents of the National Informatization Master Plan are intended to improve national competitiveness by appropriately responding to the paradigm shift of the intelligent information society. The main contents of the Sixth National Informatization Master Plan are as follows.

Under the vision of "Korea living happily together with intelligence" (NIA, 2019), the Sixth National Informatization Master Plan articulated four goals: to be an intelligent nation responsible for the lives of its people, an economic re-leap through digital innovation, creating a digital trust society together and a secure, intelligent network infrastructure. In order to achieve the goals of the Master Plan, the government intends to promote a national information policy that facilitates and spreads intelligence by providing four strategies and 13 tasks covering all fields (such as public, industry, society) (NIA, 2019, 16). These four strategies are:

1. to promote national digital conversion with intelligence
2. to build growth engines through digital innovation
3. to speed up human-oriented intelligent information society
4. to build a trust-oriented intelligence base

### *Changes in ICT policy through regime change: not combining government innovation and ICT*

The Moon Jae-in administration was inaugurated in May 2017 and announced the five-year plan of state administration in July, which consists of a national vision and five national goals, 20 national strategies and 100 national tasks. However, there is no government innovation or digital government policy within this plan. Of course, it can be said that the government innovation is included comprehensively in the transparent and competent government sector.

Indeed, transparent and competent governments include open innovation and service administration. The goal of this task is to provide public services that enable citizens to take a leading role in the policy making process, solve social problems effectively through public–private partnerships and empathize with the public. In addition, intelligent government based on state-of-the-art technologies such as artificial intelligence and big data and data-based scientific administration implementations are presented; this is not a government innovation, but an innovation of government service. Therefore, it is difficult to see that the government's goals and strategies of the Moon Jae-in administration are properly reflected in government innovation.

On March 19, 2018, the Moon Jae-in administration held the first "Government Innovation Strategic Conference" and confirmed the "Government Innovation Master Plan", which will transform the government into a people-centred operation. The contents of the "Government Innovation Master Plan" are as follows (The Government of the Republic of Korea, 2018).

At the meeting, the government hoped that by 2022, the government would make strong government-wide innovation, with the goal of achieving tenth place in the OECD's "Better Life Index" and "Government Trustworthiness" evaluation, and ranking in position 20 in Transparency International's "Corruption Perception Index".[3]

The vision of government innovation and its three strategies are as follows. Government innovation reflects the national goal to "realize a government of the people", and the means of achieving this goal are set to "promote the public interest through citizen participation and trust-building" (The Government of the Republic of Korea, 2018). This involves:

1. a shift towards a government that improves the quality of people's lives
2. a participatory democracy where citizens are engaged in policy making
3. winning trust from citizens through government innovation

The case of government innovation, which is currently being pursued by the Moon Jae-in administration, shows the problems that followed the failed model of government in the past in that there is no entity with control tower status. The government of Moon Jae-in has established a government innovation strategy conference to promote government innovation. However, this system of government innovation has no substance. This model is similar to the model that was applied for the Government 3.0 project, which ended in failure, in the early stages of the previous government.

The current government has not established a control tower to pursue administrative innovation using information technology and a digital government policy has not been included nor promoted as a presidential agenda or national task. Of course, since the Moon Jae-in administration is currently a government in progress, evaluation should be made later on. However, in view of the policies implemented so far, it is unlikely that the digital government and digital transformation policies have been successfully implemented within the government.

## Case study: the fiftieth anniversary of e-government (November 2017) – Hall of Fame and e-Government Day

The South Korean government celebrated the fiftieth anniversary of the e-government on November 1, 2017. At this ceremony conference, the South Korean government recognized 30 people, 10 services and 10 companies and organizations that had contributed to the development of e-government. It also published the e-government 50-year booklet, which marks the 50-year development of e-government in South Korea. The ceremony was based on the initial year of 1967, when computers were first introduced to South Korea – so, of course, there may be some controversy about the starting point.

The South Korean government has opened a website for the e-government Hall of Fame (www.e-gov50.kr) and introduces selected people and services. What is remarkable about this is that e-Government Day was established. In commemoration of the 50th anniversary of the e-government, the South Korean government revised the e-government law to enact e-Government Day as follows.

> **e-Government Act**
>
> **Article 5-3 (e-Government Day)**
>
> (1) In order to continuously accelerate the development of electronic government by, for example, informing the public about the excellence and convenience of electronic government and enhancing the national status of the Republic of Korea, June 24 shall be designated as the Electronic Government Day.
> (2) The State may host events that meet the intent of the Electronic Government Day.
>
> [This Article Newly Inserted by Act No. 14914, Oct. 24, 2017]

June 24 of every year is e-Government Day, celebrated through government-led ceremonies.

## Lessons learned: timing the promotion of digital government policy and the need for an approach considering the time-lag effect in evaluation

There are two main lessons we can learn from this chapter. The first is when a government should start its digital government policy. In other words, South Korea employs a five-year single-term presidential system. The United States allows up to two four-year terms for the presidency. Thus, if the president is reelected, he can govern for eight years. In the United Kingdom, there have been prime ministers who have held power for more than ten years. In South Korea, however, government tasks must be carried out over a five-year term. Therefore,

of course, pursuing policies based on strong leadership in the early days of power is the key to increasing the chances of success.

The Kim Young-sam administration, which came to power in South Korea in 1993, did not prioritize information policy in the early days of its governance, purging the military powers of the past and pursuing a new civilian government. In the Kim Young-sam administration, the digital government policies were implemented in the second half of the term. Therefore, it cannot be said that administrative reform using ICT was properly implemented. The Kim Dae-jung administration, which took office in 1998, also focused on economic recovery to overcome the East Asian financial crisis of the time. Late in Kim's term, e-government policies were upgraded as part of the presidential agenda.

The Roh Moo-hyun administration, which took office in 2003, pushed forward e-government policies from the outset, unlike the previous governments. As a result, the Roh government was able to achieve great results that differentiated it from the past government. Therefore, it is desirable to pursue digital government policies with strong leadership in the early days of the presidency.

The second lesson learned concerns the time-lag effect when evaluating the results of digital government promotion policies. Today, ICT is combined with IoT and AI and displays extremely rapid pace of development. Therefore, the process of establishing digital government by pursuing digital transformation based on ICT is also strongly time-dependent. However, the work to promote digital government does not merely involve the introduction of ICT; it also entails a complete overhaul of the law and regulations and its effects will appear over a relatively long time period.

Indeed, South Korea's achievement of ranking as the world's number-one government in the UN e-Government Surveys of 2010, 2012 and 2014 is not an achievement of the Lee Myung-bak administration alone; instead it is due to the efforst of the Roh Moo-hyun administration's e-government project, which ran from 2003 to 2008, with a huge budget and manpower. In other words, the evaluation of digital government policies requires a time-lag effect approach. If a digital government policy is implemented in a short period of time and the policy is evaluated immediately after the end of the project, it may be considered a failed project. However, if the information system is advanced after two to three years and utilization is improved for many users, this same project may be regarded as a success.

Therefore, in pursuing digital government policy, governments should stay away from the pursuit of short-term achievements visible during the president's term and consistently pursue visions and strategies that can be linked to long-term national development plans, regardless of the change of government.

## Notes

1 As described in Chapter 1, the author participated in the drafting of the e-Government Act of South Korea at the time (2000). The Task Force for drafting the e-Government Act was composed of six professors, besides civil servants, four administrative scholars

and two legal scholars. The drafting of the law began in March 2000 and was completed in June.

2 Specifically, in 2003, the United Nations e-government development phases 3–4, 2008 will enter the fifth stage. Through this, the goal was to enter the top five of the world e-government rankings in 2008. A further goal was to raise the ranking in the government transparency index, in which South Korea had last ranked in position 40, within the top 20 for 2008. The information society index was to go from position 16 in 2003 to the top five in 2008.

3 South Korea ranked in position 29 among 38 member countries in the OECD "Better Life Index" for 2017, position 38 in "Community", 36 in "Environment", 30 in "Life Satisfaction", 35 in "Work-Life Balance" and 29 in the "Glass-Ceiling Index"; South Korea has had overall the lowest ranking among 29 OECD member countries for five consecutive years. For the "Transparency of Government Policymaking" criterion in the WEF Global Competitiveness Report, South Korea came in position 98 among 137 countries in 2017. A survey on the existing government innovation efforts: "unilateral innovation with little communication with the people": 59.5% in 2017. South Korea ranked in position 32 in an evaluation of the level of confidence in national governments among OECD member countries, with a score of 24 per cent, about half of the OECD average of 42 per cent, position 51 in the "Corruption Perceptions Index", equivalent to 54 points on a 100-point scale, among 180 countries in 2018.

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# 7 Best practices of digital government in South Korea I

## Introduction

Countries around the world are promoting e-government projects by applying ICT in their administrations and are achieving great results. South Korea is among the countries that have been able to achieve national development by establishing e-government. However, performance and results are not the only reasons why the international society is focusing on the e-government of South Korea. From the ruins of war in the 1950s, South Korea achieved the "Miracle of the Han River" through remarkable economic development in only half a century. Moreover, it became the first country to turn itself from a recipient to a donor country. In this process, South Korea made a bold decision to invest 1 per cent of its national budget in e-government. Through this investment, it was able to realize a convenient, transparent and efficient government that is faster than in any other country around the world. e-government was the driving force behind South Korea's rapid development (MOI, 2017).

Now, digital government is applied not only to administrative tasks, such as HR, finance and procurement, but also to overall lifestyle, including corporate support and civil services. It also includes a system where people can freely take part in the policy making process, realizing "e-democracy" to bring about a nation run by the people. South Korea's e-government was developed based on this solid foundation and is recognized as an unprecedented global success case (MOIS, 2017a).

South Korea's world-leading e-government ranked in first place in three consecutive UN e-Government Surveys from 2010. This is an unprecedented record in the history of the Survey. Also, the various systems built into South Korean e-government are regularly exported to many countries and have received excellent feedback (MOGAHA, 2016; MOI, 2016). The systems of South Korean e-government have been recognized for their excellence, receiving many awards from various international organizations including the prestigious UN Public Service Awards, which are widely recognized as the Nobel Prize of public service (MOIS, 2017b).

As of 2017, South Korea's 22 ministries and 16 offices each have built approximately 1,300 digital government systems. In March 2018, the South

Korean government selected and announced the 100 best systems to represent the country's e-government (MOIS, 2018a). Among these systems, we select the following five for evaluation as greatly contributing to realizing a convenient, efficient, transparent and secure government.[1]

- Government 24: the official portal for electronic service delivery (www.gov.kr)
- Home Tax Service (HTS): world-class electronic tax administration (www.hometax.go.kr)
- Korea Online e-Procurement System (KONEPS) (www.g2b.go.kr)
- UNI-PASS: the world's fastest and most convenient electronic customs clearance system (portal.customs.go.kr)
- the public information sharing system (www.share.go.kr)

## Government 24: the official portal for electronic service delivery (www.gov.kr)

Gov.kr is the official portal for the South Korean government, providing Korea Government Services, civil petition services and policy information. Korean Government Services consolidates 90,000 different types of government service available to the public and classifies them into 12 categories, providing customized services in a variety of ways that are tailored to each individual citizen's life.

Citizens can access information on the competent authorities, required documents, fees, processing deadlines, related laws and regulations for over 5,000 types of civil petition online anytime, anywhere without physically visiting government agencies. Also, more than 300 of these services accept applications through mobile platforms.

### *Overview*

The system has been underway since early 2001, with the first start being the Government for Citizens (G4C) project. This initiative aims to integrate a wide range of civil services and provide a single access point across all levels of government through an online portal. System construction for G4C was completed at the end of October 2002 and it went into service in November 2002 for the first time.

Although an online civil services system was set in motion in 2002 as one of the core initiatives designed to promote e-government, the portfolio of services accessible online was limited. Thus, most users were still required to physically visit multiple government agencies and bring various supporting documents with them. This portal system offers citizens the possibility to access 51 per cent of public services online. The platform reduces opportunity and travel costs for citizens as well as government expenditure on personal service delivery.

Since then, G4C has been pushing for upgrades and expanding the number of services it provides. The name was changed to "Minwon24" from August 1, 2010, and it has been integrated into Government 24 since August 10, 2018.

Government 24 is a public service portal where civil services can be filed, viewed or issued online 24/7, without having to visit public offices. The system gives information on some 5,000 types of civil services designated by law. Over 3,000 civil services can be accessed from anywhere via the internet. In particular, 1,000 documents that are highly necessary to citizens can be immediately accessed and issued online. There is no need to visit public offices for civil services as all the processes are handled through the one-stop Government 24.

***System development***

- beginning stage: 2000–2003
  - conducted Business Process Reengineering/Information Strategy Planning (BPR/ISP) and system implementation for innovating civil petition services, launched a service under the name of G4C for 393 types of civil petition filing and 20 types of viewing.
- growth stage: 2004–2008
  - proceeded with the second BPR/ISP to expand G4C (prepared a plan to increase the amount of administrative information for joint use and the number of agencies to use it ⇒ 3 more expansion projects were conducted).
  - the first, second and third expansion projects prepared a shared system for e-civil petition services and expanded the number of types of tasks available to be performed online to 591 types.
- mature stage: 2009–present
  - performed the third BPR/ISP and an advancement implementation project for advancing civil petition services (expanded to 3,013 types of civil petition filing and 1,208 types of issuable civil documents).
  - changed its name from G4C to a more friendly name, "Minwon 24", as of August 2010.
  - March 2011–December 2012: implemented a smartphone service so users can file and view 32 types of civil petitions on their smart devices.
  - 2013–2015: by carrying out a daily life information integration project, it provided 41 types of personalized daily life information for each individual and encrypted resident registration numbers to strengthen the protection of personal information.
  - changed its name from "Minwon 24" to a more representative name, "Government 24", as of August 2018.[2]

As of July 2019, 12 million members use 96,215 services from government departments.

### *Service description*

Currently, electronic service delivery provided by Government 24 can be divided into the following three areas.

- civil service application
  - around 400 types of civil services, including move-in notification, can be used online, without having to visit public offices.
- civil document issuance
  - of some 5,000 types of civil documents, over 3,000 can be applied for online, while over 1,000 can be issued online. Some 50 types of civil documents that are closely linked to citizens' lives can be printed immediately.
- service for a better life
  - 41 types of daily life information are provided, held by public institutions, including dormant bank accounts, parking tickets, passport information.

By connecting the civil service systems of each administrative institution, including the resident registration management system and local government administration system, entire procedures of civil services from application to certificate issuance can be done in a one-stop process, such as in the case of issuing copies of resident registration. Some 3,000 types of civil services can be accessed online without having to visit government offices.

### *Major achievements*

The initial system (G4C), which was constructed in 2002, had a low utilization rate and the number of online users compared to the offline (office counter visits) was small. In the early days of system construction, although it was a breakthrough service that was seen as an innovation of civil service, web traffic was low with less than 1,000 users per day.

However, in order to improve the utilization rate, various means of electronic settlement were applied. In addition, the complicated application form was simplified and various improvements were made such as greatly reducing the input items of the application. Due to these efforts, the amount of usage increased steadily.

The system showed a low utilization rate until 2002–2003, but usage has increased rapidly since 2004. This can be seen as a result of the surge in the use of the internet issuing system for civil application documents established in the latter half of 2003. The number of electronic services that are delivered through Government 24 increased year by year to reach 61,893,547 applications, 65,371,705 issue cases and 12,994,174 view cases as of the end of December 2017 (MOIS, 2018b).

Nowadays, as the front-line civil affairs office work of issuing certificates is greatly reduced, cost savings of more than $43 million are generated every year based on the improvement of the work time of the civilian, the visit cost of the government office and the work efficiency of the civil service provider.

### *Awards*

- UN Public Service Award (2011)
  - second-place winner in the category of Improving the Delivery of Public Services in the 2011 Awards

## Home Tax Service (HTS): a world-class electronic tax administration service (www.hometax.go.kr)

The Home Tax Service (HTS) has caught some of the greatest attention of many countries regarding e-government services in South Korea. This system was also launched in 2002 and has been progressing in various fields until now. With the introduction of the HTS, taxpayers can file, pay and prepare tax returns as well as process most tax-related tasks at home or in the office online 24/7, without having to visit the bank or tax offices. Transparency of tax tasks is increased as officers can focus their expertise and time on core tasks such as analysing tax sources and not on repetitive simple work such as correcting typos and errors.

The outline of the HTS, the development of the system, the service contents and the achievements are summarized as follows (NTS, 2016).

### *Overview*

HTS is a high-tech tax administration service widely used in South Korea, which enables taxpayers to conveniently take care of their tax affairs online without having to visit a tax office. HTS not only allows tax filing and payment and application for and issuance of tax certificates, but it also enables checking and issuance of tax invoices and cash receipts as proof of payment. On the internet, taxpayers can submit various attached documents for tax filing, explanatory data for taxation documents, requests for appeal against taxation and so on. They can also set up their own plan for reducing tax payments by using services such as a simulated tax calculation and a previewed year-end tax settlement.

HTS allows taxpayers to save tax compliance costs incurred from visiting a tax office or seeking the help of a tax agent to take care of their national tax payment. HTS is a high-tech system contributing to the expansion of stable tax bases by solidifying the taxation infrastructure that provides convenient functions necessary for tax payment, thereby leading to voluntary and faithful tax filing and easier obtainment of various tax-related documents, the basis of national tax administration. By simply logging into HTS once, taxpayers can benefit from a one-stop service that helps them take care of most of their national tax affairs, such as tax filing, payment and application for and issuance of tax certificates.

### *System development*

Until the late 1990s, the National Tax Service (NTS) sent tax payment notices to taxpayers by mail and taxpayers had to visit a tax office to prepare and file their tax

returns. To mitigate such inconvenience, the NTS developed the National Tax e-Filing System from 1999 to 2000, enabling tax agents to e-file withholding and value-added taxes. In response, as part of the pan-governmental e-government project initiated in 2001, the NTS embarked on the implementation of the HTS by expanding and strengthening the National Tax e-Filing System. The total amount spent for HTS was approximately $13.7 million, all of which was covered by the Informatization Promotion Fund, and the service was launched in April 2004, laying a new foundation for e-tax administration.

- stage 1: 2002–2004
  - after the launch of HTS in April 2002, based on the previous experience gained from the test operation of the National Tax e-Filing System, its services were expanded to cover more various tax affairs.
- stage 2: 2005–2006
  - the NTS worked hard to expand and advance the existing service functions, such as e-filing, e-notice, and e-payment, and to improve user satisfaction by reflecting user feedback.
- stage 3: 2007–2010
  - starting from 2007, with HTS services advanced, more taxation documents retained by the NTS were provided for taxpayers, and an exclusive HTS counselling centre was established, laying the foundation for a quick response to future environmental changes.
- stage 4: 2011–present
- starting with information strategy planning (ISP) for an overall reorganization of the NTS data processing systems in 2010, business process reengineering in 2011 and the Next-Generation National Tax Administration System project in 2012, the NTS launched Neo Tax Integrated System (NTIS) in July 2015.

### *Service description*

In the early stages of HTS (April 2002), taxpayers experienced the inconvenience of visiting a tax office for identity authentication if they wanted to be registered members of HTS. After continuous efforts to mitigate such inconvenience experienced by taxpayers without violating their right to personal information protection, an improvement was made in October 2002 to allow those who hold a user certificate to be registered as members of HTS without having to visit a tax office. In addition, in January 2004, taxpayers who did not have a user certificate were given a personal identification number (PIN) through various tax guidance notices and were allowed to be registered on HTS with that PIN. Starting from November 2006, taxpayers' convenience was further enhanced with a smartphone PIN issuance service.

1 e-tax filing service

The e-tax filing service allows taxpayers to prepare and file their tax returns and any attached documents along with them on HTS. On HTS, taxpayers can e-file all tax items except for inheritance tax.

2 e-notice service

The e-notice service delivers tax notices to taxpayers electronically via HTS and those who have applied for periodic e-notices can log into HTS to check the details.

3 e-payment service

The e-payment service allows taxpayers to conveniently pay national taxes by bank transfer or credit card.

4 taxation data e-filing service

The taxation data e-filing service allows taxpayers to e-file their taxation data such as various payment statements, tax invoices and other bills.

5 e-tax certificate service

The e-tax certificate service allows taxpayers to apply for and have issued various tax certificates related to national taxes on HTS anytime, anywhere.

6 cash receipt service

The cash receipt service enables the NTS to collect cash receipt details from cash receipt business operators and allows consumers and business owners to benefit from a tax credit or deduction based on the details of their cash receipt transactions.

7 e-tax invoice service

Taxpayers can electronically write and issue a tax invoice (e-tax invoice), instead of paper tax invoices, and submit the details to NTS. Then, NTS provides an e-tax invoice service for taxpayers to check and use their history of tax invoices in various tax filings.

8 year-end tax settlement service

The year-end tax settlement service is an online service where the NTS collects and provides various tax deduction data (13 types), such as medical expense details, credit card usage details and educational expense details, which are required for wage earners' year-end tax settlements.

9 My NTS (one account per taxpayer)

My NTS allows taxpayers to check their tax information (65 types) such as tax filing details, tax clearance details, tax notices and taxation data in one place at one time.

10 national tax law information service

The national tax law information service provides both NTS officials and taxpayers with information on national tax-related legislation, notifications, guidelines and interpretations of tax law.

11 simulated tax calculation service

The simulated tax calculation service allows taxpayers to calculate in advance the amount of tax they should pay or tax refunds they can receive, enabling them to establish a tax reduction plan.

### *Major achievements*

Since its launch, the HTS has been continuously upgraded to become a widely used and indispensable system for a large number of taxpayers in taking care

of their tax affairs, attaining most of the initial goals of establishing the HTS. The HTS has significantly enhanced taxpayers' convenience, which has greatly reduced the number of visits to tax offices and tax compliance costs. The increased accuracy and efficiency of national tax administration contributes to not only ensuring transparency in the national economy but voluntary, faithful tax filing.

1 Contributing to the reduction of tax compliance costs

With the wide use of the HTS for tasks such as e-filing and payment and e-tax certificates, tax compliance costs such as the need to visit a tax office and prepare various documents have greatly reduced.

- After its launch in July 2000, the HTS has seen an increasing number of users, thanks to a lot of efforts to promote the HTS to the public and offering incentives. As of the end of 2015, the accumulated number of visitors amounted to 2.3 billion.
- Since the launch of the next-generation HTS, in particular, which integrates eight individual online systems, the number of visitors has exceeded 1 billion annually.

2 ensuring economic transparency

- With the introduction of the cash receipt system, it became possible to electronically manage the details of B2C transactions, contributing to preventing tax evasion involving cash transactions between businesses and consumers.

3 contributing to voluntary tax filing

Once taxpayers become a member and log into the HTS, they can handle most of their tax affairs in one place at one time and can enjoy the highest level of convenience in tax payment through the pre-filled and fully filled services that automatically fill out their tax returns when e-filing them.

4 expanding interactions with national institutions

The NTS will continue to improve the HTS system to provide greater tax payment convenience and increase work efficiency, for example, by expanding interactions between the systems with other national agencies.

5 providing better mobile services

In line with the rapidly changing smart digital era, the NTS will continue to expand mobile electronic tax administration services.

### *Awards*

- In 2008 South Korea's became the world's first tax agency to receive ISO/IEC 20000 certification.
- In 2006 it was awarded the Best Practice in Electronic Tax Administration Award by the OECD (2006).

## Korea Online e-Procurement System (KONEPS) (www.g2b.go.kr)

Government organizations require a vast amount of human and material resources to perform not only basic functions for a nation to exist, such as

diplomacy, national defence and security, but various other missions including education, environment, society, welfare and transportation. The categories of government procurement are largely divided into goods purchases for supplying material goods, service contracts for providing various services and construction contracts for providing office environments or buildings and other facilities (Public Procurement Service, 2016).

The basic concept of procurement, which is to supply resources required for managerial activities in a more economical and effective way, is the same for both the public and private sectors, but what is different in government procurement is that the financial resources to purchase public goods for the public activities of a nation mainly come from the taxes collected from its citizens. Therefore, the introduction of an e-procurement system can contribute to reducing the corruption of a country and enhance the transparency of its government.

### *Overview*

KONEPS (Korea Online e-Procurement System) is a single window to all government procurements. The entire process of procurement, such as supplier registration, bidding, contracting, inspection, payment and so on, is undertaken electronically through KONEPS, which is being recognized as an exemplary case of public-sector innovation throughout the world.

In the past, most public procurement was conducted through paperwork and face-to-face contact, which was open to the potential for corruption between public officials and suppliers. To resolve the problems with the existing procurement system, a decision was made to carry out a comprehensive national e-procurement (G2B) system implementation project. After the G2B system implementation project was selected as one of the 11 core tasks for e-government by the Special Committee for e-Government in 2001, joint government efforts to implement a pan-governmental system commenced.

KONEPS implementation goals are summarized as follows.

- strengthened transparency
- efficient procurement
- government budget savings

### *System development*

- establishment of the KONEPS Implementation Plan (August–December 2001)
- implementation of KONEPS (March–December 2002)
    - main areas of project implementation: the KONEPS implementation project was carried out for ten months from March to December 2002, and the main areas of the project comprehensively included infrastructure implementation, programme development, standardization, linkage between agencies, law and system modification etc.

- advancement of KONEPS
  - recently, the achievements of government procurement have also been applied to private bid contracts that influence the general public, some of which include the subcontract management system (2013), for subcontract and payment management guaranteeing fair subcontracts, and the e-procurement system for public housing management and non-profit organizations.

### *Service description*

KONEPS is a national comprehensive e-procurement system that allows people to do business with the government by processing all the procurement processes online, including registration, bidding, contract, receiving and payment.

All procurement work from registration to payment is processed online through KONEPS in a single window, thereby improving efficiency, productivity, transparency and integrity. Under these circumstances, the South Korean e-procurement market has been developed into one of the largest markets in the world.

KONEPS has three service characteristics:

- a single window
  - all public tender notices are required to be posted on KONEPS; registered vendors are entitled to participate in all public tenders
- a one-stop service
  - KONEPS is connected to database systems of external public entities such as administrative organizations, certification agencies and associations to provide one-stop procurement services
- standardization of procurement
  - a standardized procurement service is provided by processing all procurement work online through KONEPS from registration, bidding, contracting and evaluation to payment

### *Major achievements*

The e-procurement market in South Korea has become one of the largest e-commerce markets in the world, in which about 47,000 public institutions and 268,000 suppliers participate. Digitalized procurement procedures greatly increase productivity and efficiency. The amount of contract processing per person increased after the introduction of the e-procurement system. Illegal bidding attempts are completely blocked with the help of a fingerprint recognition e-bidding system and e-procurement also reduces face-to-face contact, further increasing transparency and integrity. Improved processes from KONEPS brought simplified procedures and annual savings of time, transportation cost and others. The main effects of the introduction of the e-procurement system can be summarized as follows (MOIS, 2017b).

- growth into the world's largest government e-marketplace
- significant improvements to the efficiency of government procurement
- enhanced government procurement transparency and fairness
- addition of a policy support function

### *Awards*

- 2007 Asia Pacific Council for Trade Facilitation and Electronic Business (AFACT) E-Asia Award
- 2006 WCIT Global IT Excellence Award (WITSA)
- 2004 OECD recognition of KONEPS as a system with a strong pull-through effect on ICT use
- 2003 UN Public Service Award

## UNI-PASS: the world's fastest and most convenient electronic customs clearance system (portal.customs.go.kr)

UNI-PASS is the electronic customs clearance system used by the Korea Customs Service. It is the world's first electronic customs clearance system that automates export/import customs, tax collection and other customs administrative tasks.

UNI-PASS is an e-customs system that provides swift customs clearance, increases government revenue, connects various government and private parties to facilitate international trade and ultimately contributes to the economic development of South Korea and many other countries (Korea Customs Service, 2016).

### *Overview*

With the purpose of complete customs border control, UNI-PASS is a fully automated system that secures national finance through accurate and fair taxation on import and export cargo, maintains international trade order through controlling smuggling activities and foreign exchange and supports domestic industries through swift clearance and FTA business management.

After UNI-PASS was introduced in 2006, 100 per cent electronic customs clearance was realized. Over 180 million electronic documents are processed in real time every year. Before UNI-PASS, the average processing time for customs clearance was one to two days. After UNI-PASS, it decreased to 1.5 minutes for export and 1.5 hours for import. It is the fastest among 180 WCO member countries. As speed increased, logistics costs were reduced, trade volume increased and tax revenue increased. Tax revenue was $8 billion in 1990 and grew to $52 billion in 2015.

### *System development*

- first generation (1974): simple online statistics
- second generation (1994): EDI clearance system

  - phased development of the first automated e-clearance system; UNI-PASS in an EDI-based environment began in 1994: export and import clearance (1996), cargo management (1997), paperless clearance (1998) and an investigation system (1999). Supporting solutions were introduced to the UNI-PASS system, such as a customs data warehouse (2001), a knowledge management system (2001), a risk management system (2003)
- third generation (2004): internet clearance system
  - phased development of the web-based UNI-PASS was pursued by transferring the existing EDI system into a web format and additionally developing an internet portal (2004), duty collection (2005), drawback (2005), a single window (2005) and a performance management system (2005). UNI-PASS continued to introduce up-to-date IT technology such as RFID in air cargo management, (2007) and expanded by developing an integrated risk management system (2007), an AEO management system (2008) and more
- fourth generation (2016): smart clearance system
  - since the year 2016, the UNI-PASS system has been in its fourth generation, adapting mobile concepts with the goal of creating an intelligent customs administration system based on smart clearance

### *Service description*

UNI-PASS is a comprehensive customs automation system that enhances the entire customs administration. Implementation of UNI-PASS involves enhancing regulations, business practices and organizational structure by applying automation techniques.

Each component has various subsystems that when put together provide a fully functional e-customs system. Furthermore, by applying international standards the system is compatible with any customs business environment, prepared to share information with other customs authorities.

The UNI-PASS system has undergone various changes for a long time and has promoted its advancement. These enhancements consists of implementing the following six service areas.

- customs business component
  composed of modules for the automation of customs administration, this includes business procedure modules (cargo and clearance management etc.) and non-business procedure modules (investigation, audit etc.)
- integrated risk management component
  assists and supports the customs administration component with modules such as the customs data warehouse (CDW) and integrated risk management (IRM) module
  - use of the customs data warehouse (cdw) for comprehensive analysis and reporting
  - risk management profiles focused on companies, individuals and not only goods

- single-window component
  provides public users with modules such as the single-window portal and a G2G data exchange module that lets them handle customs clearance process without visiting a customs office
- IT management component
  controls and administrates the overall e-customs system to prevent any system failures. It consists of modules such as the EWACS and IT resource management module etc.
- customs administration component
  supports the customs administration process and provides non-business procedural functions such as knowledge management and performance management
- international standards
  the UNI-PASS system is based on international standards such as WCO DM 3.0. UN codes and has applied international recommendations such as the Revised Kyoto Convention and the WCO SAFE Framework. Based on such foundations, the system has been exchanging customs data with other countries

### *Major achievements*

The effects of introducing the UNI-PASS system can be summarized as follows:

- time-savings
- cost-savings
- integrity in the customs service
- a high level of customer satisfaction

The UNI-PASS system is used in more than ten countries, beginning with Kazakhstan in 2005, Kyrgyzstan and the Dominican Republic in 2008, Guatemala and Mongolia in 2009 and Ethiopia in 2016.

### *Awards*

- 2009–2013: first-place ranking in Trading Across Borders, World Bank Doing Businesses
- 2009–2014: Best Practice of "Doing Business", selected by the World Bank
- 2013: UNI-PASS for Ecuador (ECUAPASS) won the World Customs Organization Innovation Award
- 2007: e-ASIA Award from the Asia Pacific Council for Trade Facilitation and Electronic Business (AFACT)
- 2004: Best Practice of the Parcel Tracking System, selected by the World Customs Organization
- 2001: Innovative Practice of e-Clearance Services, selected by Inter-American Development Bank & Asian Development Bank (IDB&ADB)
- 2001: Best Practice, selected by the UN Anti-Corruption Forum

## The public information sharing system (www.share.go.kr)

Nowadays, the public information sharing system is realizing paperless administration, providing convenience to people through information sharing. The public information sharing system enables civil servants to view necessary information online, eliminating the need for people to request and deliver printed documents.

Now, civil servants do not have to request every single document when processing administrative or civil tasks. When given prior consent, most of the necessary documents can be viewed online through the public information sharing system. People do not have to visit multiple offices to file for services; 148 types of administrative information, including resident registration, passports and housing prices, are shared by 627 organizations, including administrative offices, public institutions and financial institutions. The accumulated use from 2005 to 2015 was over 1.26 billion. The aim is to expand the shared information to include all public, financial and educational institutions.

### *Overview*

In a national administration tasks meeting overseen by the president in July 2005, the problems of administrative information sharing were perceived and administrative information sharing was adopted as one of the major government policies. Accordingly, the Administrative Information Sharing Implementation Committee and Administrative Information Sharing Task Force were set up in November 2005 and launched the project into full swing.

Over past decades, citizens took it for granted that they were obliged to carry numerous required documents, ID cards and seals when they visited government offices to submit civil applications. As a result, the number of documents citizens submitted to administrative agencies, public agencies and financial institutions amounted to 440 million annually. Citizens had to prepare documents for up to ten days had to make more than ten visits to government offices for document preparation annually. This necessitated fundamental improvement measures utilizing administrative information sharing to reduce the number of required documents, which caused inconvenience to citizens and waste in the form of social costs.

There was also a necessity for a centre that could offer integrated management of major information required for administrative information sharing and provide necessary information to agencies demanding it in a timely manner, urgently requiring the improvement of a government-wide information sharing implementation system.

The public information sharing system has three major characteristics.

- increased convenience, improved efficiency
- savings to transportation fees and other social costs
- the provision of necessary information securely and quickly

### *System development*

On October 18, 2005, the Administrative Information Sharing Promotion Committee was established under the prime minister to strongly pursue the "Administrative Information Sharing Expansion Project" on a government-wide level, which was one of the 31 tasks of the e-Government Roadmap initiated by the participatory government (MOPAS, 2010).

- First-Phase Administrative Information Sharing Infrastructure Construction Project (December 2005–August 2006)

  The First-Phase Administrative Information Sharing Infrastructure Construction Project was aimed at establishing infrastructure for information sharing between information suppliers and information recipients; securing capacity of the administrative information sharing system and improving its functions in preparation of an increase in the usage rate following the expansion of information and entities subject to sharing, thereby securing stability of the administrative information sharing service; and building infrastructure for government-wide administrative information sharing.
- Second-Phase Government-Wide Administrative Information Sharing System Construction Project (September 2006–March 2007)

  During the Second-Phase Government-Wide Administrative Information Sharing System Construction Project, the administrative information sharing system was expanded and constructed to allow government-wide utilization of e-Hanaro Civil Service. More specifically, the scope of types of information and entities (to include public agencies and financial institutions) subject to administrative information sharing was expanded, while attempts were made to shift service to a standardized integrated connectivity system to upgrade service and come up with measures for stable and efficient connectivity.
- Third-Phase Expanded Construction of Administrative Information Sharing Project (December 2007–October 2008)

  The Third-Phase Expanded Construction of Administrative Information Sharing Project was implemented with the goals of maximizing the information sharing effect through the sustained expansion of the e-Hanaro Civil Service, offering a stable operation infrastructure to guarantee service reliability and strengthening customer-oriented service to boost user convenience.
- System enhancement (2009–present)

  The system was required to be completed within a total of 72 months from the start of system implementation and a total of $76.9 million was spent on the project.

### *Service description*

The public information sharing system is largely composed of the Administrative Information Sharing Centre and the Call Centre. The system configuration of the

Administrative Information Sharing Centre largely consists of a connectivity area, internal/external area, public/financial area, relay system area, trail management area and a call centre area. The service areas of the public information sharing system are as follows.

- establishment of the connection system
- establishment of the authentication system
- establishment of the access trail management system
- establishment of a call centre system

### *Major achievements*

First of all, there is the advantage of reducing time and opportunity costs to citizens. Not only are there advantages from the perspective of citizens, but there are also anticipated benefits in terms of administrative and public agencies and financial institutions that handle work.

It was anticipated that in the case of civil applications, citizens only filled in civil application forms and did not need to visit government offices to submit the required documents, thereby simplifying the application for licences/permits and loans. Before the launch of the administrative information sharing service, about five days were required to prepare the average five or more required documents in the case of loan applications. However, now they can be immediately processed at civil application windows at financial institutions. In addition, it took up to ten days to prepare two to seven types of documents required for licences/permits, but now they can be immediately processed at the civil application window, which is expected to contribute to improving the convenience of citizens.

Until now, copies of certificates and abstracts in a certain format had to be submitted as required documents, raising the possibility of excessive exposure of personal information in handling civil applications. However, when administrative information sharing is realized, essential information is provided in various formats with the anticipated advantage of personal information protection.

Not only are there advantages from the perspective of citizens, but there are also anticipated benefits for the administrative and public agencies and financial institutions that handle work. Even when citizens submit incorrect documents, they can check information in real time without the inconvenience of having to reprocess the work, so the processing of business can be completed in a prompt and accurate manner.

### *Awards*

The administrative information sharing project was nominated for the UN Special Public Service Awards (PSA) in the category of "Improvement of Public Administration" and passed the second round of screening. As a result, the project was introduced in the 7th Government Innovation World Forum held in Vienna, Austria on June 26–29, 2007.

## Case study: the promotion and utilization of smart work projects in South Korea

The South Korean government has been promoting smart work policy since 2010. This smart work policy was promoted as one of the e-government projects to address national challenges such as a low birth rate, an aging population and the promotion of low-carbon green growth. This is a way of working wherever and whenever by using ICT, regardless of time and location. This is different from the traditional teleworking because not only does it emphasize the flexibility of the workplace but it also involves the advancement of the way of working and the working culture.

On July 20, 2010, the South Korean government reported the "Smart Work Activation Strategy" to President Lee Myung-bak and established a vision and strategy for the advancement of national society through the balance of work and leisure. By 2015, the government decided to create an environment where 30 per cent of all workers could participate in smart work. This smart work policy later received strong support that was motivated by the relocation of the administrative capital of South Korea, that is, relocation of the administrative function of the government from Seoul to the new Sejong City from 2012. Six central ministries in Seoul moved to Sejong City in 2012, followed by six more ministries in 2013 and four more in 2014. The Ministry of Public Administration and Security moved to Sejong City in early 2018. In addition, the use of mobile devices and cloud environments was introduced for administrative tasks, laying the groundwork for smart work.

In South Korea, the progress of smart work was relatively slow compared to that of the US, Japan and the Netherlands. The reason is that South Korea was relatively small in size and rarely experienced natural disasters. In the United States and Japan, various natural disasters such as earthquakes and hurricanes occur frequently, so there was a need to implement smart work sooner. However, with the national policy of relocating the administrative capital from Seoul to Sejong City, smart work is now widely used.

The South Korean government built and is currently operating a public-sector smart work centre with an ICT-based teleworking system centred in Seoul. After opening two locations in 2010 and expanding to eight in 2011, smart work centres were opened in all 17 metropolitan governments by 2017. Apart from this, dozens of smart work centres are currently in operation.

In order to establish these smart work centres, various projects were carried out by spending more than $100 million from 2010 to 2015. These initiatives ranged from the establishment of smart work centres to the activation of digital collaboration policies and the reform of human resources and organizations. The South Korean government expects various effects such as reducing social overhead costs, improving work productivity, improving administrative services and promoting the ICT industry.

Recently published research shows that the success condition of smart work policy is the improvement of law and institutions in the field of organizational

culture, which is even more important than technical support such as the introduction of video conferencing systems.

## Lessons learned: South Korea's early e-government project experiences

The Government 24 project discussed in this chapter was implemented for two years from 2001 to 2002. At that time, the project was carried out under the name of G4C, which was the first civil administration service through the government portal. It was also the first presidential agenda project in the history of digital government policy in South Korea, which was promoted as an inter-ministerial e-government project.

The purpose of this project was to provide an integrated e-application service and to share administrative information through the government representative portal. Therefore, technical and institutional problems had to be solved in order to link the systems of various ministries and provide integrated administrative services. In this process, since various ministries were both providers and users of the information, government ministries were reluctant to provide their own information. Since ten ministries were to provide or receive information on projects, it was difficult to resolve their conflicts of interest. In addition, the common use of such information required not only the administrative departments' information but also the information on family registers and real estate registration of the judiciary; this meant that no single authorized ministry was capable of solving the problems that were raised in this process by itself. At this time, however, the President's Special Committee on e-Government led the project and the strong support of the president greatly contributed to the establishment of the nationwide system (Ahn, 2017).

Hence, lessons from South Korea's first digital inter-ministerial e-government promotion project can be summarized as follows.

- share objectives from the beginning of the project and clearly assign roles to each agency.

  In the case of inter-ministerial projects, the vision of the project is often not clear and the goals are not clearly recognized among the participating agencies. In addition, a ministry's ego often make it difficult to achieve cooperation among agencies. Therefore, various reports, active public relations and education from the beginning of the project should ensure that not only the policy makers of relevant ministries but also those who carry out the actual tasks understand the goals and future vision of the project.
- encourage active participation of relevant ministries at each stage of the project.

  It is necessary to encourage voluntary and active participation by securing various ways of communicating and discussing opinions and viewpoints, including workshops with the representatives of each department. In other words, by sharing the goals of the project as well as providing a system to continuously share information and feedback on the process and progress of

the project, the possibility of future disagreements or disputes among ministries should be reduced.

- establishment of a dedicated organization with strong authority to drive e-government projects.

  The body responsible for promoting e-government projects should be organized independently so that it does not belong to a specific ministry. Budgeting authority should be given to these independent organizations to eliminate duplication of work in individual ministries, to coordinate and lead the integration of business functions, to avoid system redundancy and to effectively execute the information policy budget. In addition, an efficient operation plan should be prepared for an organization that will continuously manage and operate the project after the system implementation. In order to respond proactively and quickly to problems occurring in the operation of the system, the functions of obtaining active cooperation of the relevant ministries and maintaining an objective stance in the case of conflicting interests among the ministries should be properly implemented.

## Notes

1 The best practices of South Korea's e-government covered in this chapter are all based on promotional materials officially released by the South Korean government.
2 Government 24 was officially launched in July 2017. Subsequently, the "Minwon 24" service has been incorporated into "Government 24" since August 2018, which was already a part of the e-government project. Currently, "Government 24" provides government service information and civil administration processing.

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# 8 Best practices of digital government in South Korea II

## Introduction

The best practices in the previous chapters were success stories based on information systems developed in South Korea over the past two decades. However, the projects we will explore in this chapter are a collection of best practices that focus on policy and institutional improvement rather than on information systems development. In addition, they involve the task of pursuing administrative innovation inside the government in the back office, not the front-office level of the public service. Therefore, I would like to examine the best practices of digital government in terms of innovation in law, regulation and institutional perspectives.

Many people tend to confuse e-government with the construction of information systems. However, the realization of e-government or digital government is far deeper than the construction of information systems. It also calls for holistic government innovation, not just the introduction of ICT in the public sector. Therefore, the best practices discussed in the previous chapter are important for obvious reasons, but the institutional aspects and systems discussed in this chapter are also very important.

Among these best practices, the following are five selected success stories that have been evaluated as greatly contributing to realizing a convenient, efficient, transparent and secure government.[1]

- the National Information Resources Service (NIRS): the heart of South Korean e-government (www.nirs.go.kr)
- the government business process management system (On-nara BPS): real-time reporting and handling of all administrative tasks online to save time and cost
- the Digital Budget and Accounting System (dBrain): an integrated financial management information system
- the information disclosure system (www.open.go.kr)
- the Information Network Village (INVIL): a self-sustaining village community enabling continued growth (www.invil.org)

## The National Information Resources Service (NIRS): the heart of South Korean e-government (www.nirs.go.kr)

The National Information Resources Service (NIRS) has provided 24/7 convenient and safe e-government services since 2005 as the world's first government-wide data centre and as an innovative practice to manage information resources of central government institutions; it deals with the resources of 44 client agencies, such as by providing technical support for buildings, systems and HR. NIRS has integrated all scattered ICT infrastructure to stably operate the Haraware (H/W), Software (S/W) and Networkware (N/W) of these agencies and such integrated operation has increased the level of efficiency and stability in system operation.

### *Overview*

In the early 2000s when e-government was expanding and individual ministries were building and operating their own e-government systems, problems such as redundant investments in information systems, a lack of security experts and facilities and inferior computing environments came to the fore, as well as:

- the need to come up with strategies to respond to security attacks and natural disasters in a systematic way
- increasing demands for stable and consistent services
- gaps in the quality management of administrative service among agencies
- low efficiency per investment and increasing costs of computing operation

The South Korean government decided to establish an integrated data centre (IDC) exclusively for government use – the first in the world – with the aim of addressing the above-mentioned problems and to build up the foundation for reliable and sustainable e-government.

Initially, this project started by merely integrating H/W and networks, mainly servers running in government departments, but gradually expanded to public-sector cloud operations. In the early days of the 2001 plan, there was doubt about success among the experts, but now it is recognized as the most successful case among the e-government projects in South Korea. The big role it has played is now referred to as the heart of the digital government operation in South Korea.

The current status of NIRS can be summarized as follows.

- integrated operation of government information systems
  - NIRS systematically operates around 47,000 units of H/W and S/W of 44 central government agencies. These extensive systems are managed by n-TOPS (the National Total Operation Platform System), which is a house-designed operating system; n-TOPS seamlessly links NIRS and respective ministries together to communicate with each other and to provide reliable service.

- total security service against cyber threats
- complete provisioning for contingencies
- the integration and co-use of information resources
- the provision of quality infrastructure

### *Development*

The development process of NIRS through the website (www.nirs.go.kr) can be summarized as shown below.

- Phase 1: planning (2002–2004)
  Strategic plans were developed by analyzing problems in promoting informatization, benchmarking other countries and collecting opinions of departments and experts.
- Phase 2: establishment (2004–2006)
  A master plan for establishing the government integrated data centre (GIDC) was developed. A world-class infrastructure and operating environment for the IDC were constructed in Daejeon and Gwangju.
- Phase 3: relocation (2005–2007)
  Information systems that had been built and operated individually by departments were relocated to the GIDC.
- Phase 4: operation (2008–2013)
  This involved the bulk purchase and sharing of ICT resources, transition to a cloud computing environment and the provision of a mobile e-government service.
- Phase 5: improvement (2013–present)
  NCIS continues to put its best efforts into providing more efficient and advanced e-government services through:
  - organizational reengineering (2013)
  - operation of the Big Data Analysis Division (2015)
  - changing the corporate title from NCIA (the National Computing and Information Agency) to NCIS (the National Computing and Information Service) (2015)
  - initiation of the Cloud Team (2016)
  - launch of the NCIS Daegu Data Center Implementation Bureau (2016)
  - launch of the Government N/W Integration Bureau (2016)
  - changing the corporate title from NCIS (the National Computing and Information Service) to NIRS (the National Information Resources Service) (July 2017)

### *Service description*

The services currently provided by NIRS can be summarized as follows (MOIS, 2017a).

- Smart National Cloud Computing Centre
  - NIRS completed its Cloud Migration Project of 740 e-government services into the exclusive Government Cloud (G-cloud) by the end of 2017
- stable operation of e-government service
  - NIRS has been operating and comprehensively managing around 26,000 information systems of 45 central administrative institutions
- enhanced cyber security management capability
  - NIRS protects government information systems from various cyber threats. Its in-house multilayered intelligent cyber security management system does not allow any type of cyber attack, including hacking, DDoS and malware, to defeat the systems and provides safe e-government services in a stable manner
- scientific policy making through big data analysis
  - as a leading government institution that employs big data technologies, NIRS is making various efforts for scientific administration to be disseminated throughout the government. It conducts big data analysis on social issues to serve people conveniently and develops applicable models with analyzed results to support scientific policy making process. At the same time, the "Hye-an" big data common platform for public officers was developed and is being provided
- efficient information resources management
  - NIRS implemented a resource pool by integrating scattered government ICT resources. It bulk purchases and provides total management service on all-government required IT resources so that it can serve client agencies in a prompt and efficient manner

***Major achievements***

The major achievements of NIRS can be summarized on the website (www.nirs.go.kr).

- stability
- security
- savings
  - 50 per cent of costs savings compared to previous individual resource acquisition through bulk purchase and the cloud; replacing device per its lifecycle and using domestic-brand HW/SW
- G-cloud
  - in total 577 services (76 per cent of the goal of 740) had been transferred to the G-cloud by 2016; it has met its objectives every year by finding services to be converted and proactively cooperating with clients
- big data
  - improving awareness of the "Hye-an" big data portal through project analysis and PR activities; time to locate a specific IP was three hours before the system and 3.7 seconds in 2015.

### *Awards*

- The Korean government supported the establishment of government data centres in Nepal (2009) and Mongolia (2010) as part of Korea ICT Official Development Assistance (ODA).
- On March 22, 2016, NIRS signed a memorandum of understanding with Thailand's EGA (e-government agency: the government data centre of Thailand under the Ministry of Information and Technology) in the area of big data.

## The government business process management system (On-nara BPS): real-time reporting and handling of all administrative tasks online to save time and cost

On-nara BPS[2] is a nationwide information system that was established based on the standardized Business Reference Model. It is aimed at improving the efficiency of governmental business procedures, enhancing transparency in decision making and effectively managing knowledge generated in the business process. On-nara BPS was strategically established in 2003 as part of 31 e-government roadmap projects to enhance the internal efficiency and effectiveness (IEE) of governmental organizations, which is one of the four core elements of e-government.

### *Overview*

On-nara BPS standardizes, integrates and systemizes the process of administration services to innovate the working methods of public officials. The administration goes through planning, document creation, decision making, sharing and recycling. All government administrative work proceeds mainly through documents. The person in charge makes a draft and sends it to the supervisor for approval. The supervisor reviews and approves it. The approved document is shared and recycled. On-nara BPS manages the whole process digitally with a task management card and a document management card to standardize and systemize the government's business processes (MOPAS, 2016).

The purposes of On-nara BPS include standardization of the entire administrative process, scientific and systematic process management, sharing of knowledge information and linkage of work assignments. First, it aims to standardize the entire administrative process through the information system. Second, it intends to classify decentralized and complicated government business processes by function and unit assignment and to systematically manage them from the planning stage to execution. Third, various processes are linked and integrated to assist with the sharing of knowledge information based on the system.

Accordingly, On-nara BPS is a comprehensive governmental business management system established to improve the internal efficiency of governmental

institutions and enhance the quality of decision making by monitoring and analyzing information on the business implementation process.

### *Development*

- BPR/ISP (August 2004–September 2004)
  Based on the document management system and the task management system of the e-support system, which is the business management system of the Blue House, the redesign of business and the establishment of the information strategy plan (BPR/ISP) was established.
- development and pilot test (May 2005–March 2006)
  The Ministry of Government Administration and Home Affairs set up the Integrated Administrative Innovation Promotion Team as a working organization to establish the establishment of the government affairs management system (On-nara BPS), which was opened for trial in July 2005 and fully opened in October 2005.
- Diffusion: applied to all central government agencies (July 2006–May 2007)
  Based on the results of the pilot operation, by the end of December 2006, a plan for the spread of On-nara BPS to all central government agencies was made.
- system enhancement (May 2007–July 2008)
  As a result of analyzing users' needs and opinions after opening the system, user complaints had been raised that the existing electronic document system should be used in parallel to execute documents to external organizations. As a result, an On-nara system upgrade project was promoted.
- local government expansion project (2010–2012)
  From 2010 to 2012, the government carried out the proliferation of On-nara BPS for 230 municipalities.
- open cloud-based system advancement and diffusion (2015–present)
  Through the ongoing cloud-based On-nara system upgrading project, the project was promoted in 26 institutions at the centre and then spread to all central government offices in 2019.

### *Service description*

On-nara BPS standardizes the government business process by managing the entire business process online through the use of task management cards and document management cards. In order to support the process, On-nara BPS manages tasks, documents, daily plans, meetings and directives as follows.

- task management
  - All job obligations of an organization are classified according to functions and purposes, and the most basic unit obligations are defined as unit task and management task, and business implementation and achievements are systematically managed through the use of management cards by the

task. It automates support for the implementation of business processes located in the most basic unit in the administrative hierarchy identified in the Business Reference Model (BRM). Task management cards consist of a title, achievement management, planning management, quality management, PR management and customer management.

- document management
  - Document management aims to standardize the establishment and handling of documents for the purpose of implementing the business process facilitating reasonable decision making. It is supported by document management cards and memo reporting. The document management cards support the entire process ranging from documentation and reporting to cooperation and records and manage opinions suggested in the implementation process in addition to related materials and the contents of decision making. In addition, as the time required to make a decision is indicated by the minutes and seconds on a card, it induces related personnel to make a decision as soon as possible.
- daily plan management
  - Daily plan management aims to enable an individual civil servant to establish a business plan and schedule and share information with pertinent personnel to effectively implement the business process.
- directives management
  - Directives management aims to objectify and clarify vertical communications of an organization for effective implementation. In the past, when high-ranking officials including ministers and deputy ministers gave verbal directives, they often failed to accurately reach subordinates. In addition, supervisors had difficulties in managing and checking the results of execution. Directives management resolves the problem by registering directives from ministers and deputy ministers in the system and helps manage the implementation process and achievements.
- meeting management
  - Meeting management can support collective decision making. It defines the type of internal meetings held in an administrative institution and helps an administrator manage meetings through a consultative body. The result of a meeting is automatically registered on document management cards. Meeting management can contribute to improving efficiency by helping facilitate digital meetings and saving costs and administrative powers on the part of personnel who need to prepare various documents for an offline meeting.

### *Major achievements*

Tangible and intangible achievements of On-nara BPS are divided into the system dimension, organizational management dimension and national affairs management dimension. First of all, On-nara BPS enhances efficiency in time, space and technologies with regard to operation. As it supports documentation, horizontal/

vertical communications, e-approval and document preservation online, it helps deal with business without travelling. In addition, as it minimizes business processing time and provides quality information in time, it helps maximize the effective use of time in business management and decision making in general. As it helps reconstitute the information generated from business process according to customer demand and provides it in good time, it enhances the usefulness of information.

It enhances responsibility, quality of decision making and management of achievements of organizations with regard to organizational management. It accurately records who is responsible for what in the entire business implementation process and clarifies individual/collective accountability with regard to the business process. It also provides useful information in time to improve the quality of organizational decision making. It organically links organizational achievement management systems, playing an essential role as a backbone system that supports the improvement of achievements of all organizations.

On-nara BPS not only contributes to enhancing the achievements of each administrative institution, but it also supports national affairs management by organically connecting to other governmental systems. It links and integrates the management systems of each institution to effectively manage the execution of important national projects. As a result, On-nara BPS discloses the progress of national projects and their achievements to the general public in order to enhance transparency in national affairs management and improve governmental accountability. This is done with an aim to

- enhance policy decision process
- lay the foundation for innovation in government affairs
- innovate administration
- change management to introduce and establish the system

### *Awards and overseas expansion*

- selected among the "Top 10" by the World e-Democracy Forum (France) (2007)
- On-nara BPS is difficult to spread to other countries due to the nature of its work. Nevertheless, Uzbekistan is currently adopting and utilizing On-nara BPS; in 2017, the system based on the e-government standard framework. In 2014, the Dominican Republic conducted a preliminary feasibility study to introduce On-nara BPS

## The Digital Budget and Accounting System (dBrain): an integrated financial management information system

The need for change and innovation in managing national finance arose with the growing number of worldwide uncertainties and crises. In South Korea, financial systems before 2007 could not provide integrated financial information

as they were managed independently by different government agencies. An integrated system was needed for the government to conduct major financial reforms, such as a national fiscal management plan, top-down budgeting, performance management and accrual basis accounting and double-entry bookkeeping standards. Therefore, the development of a digital budget and accounting system (dBrain) was planned. However, this system took a long time from development to stabilization, launching in 2007 after many difficulties including inconsistency of data.

### *Overview*

dBrain, short for "digital brain", is the brand name of South Korea's digital budget and accounting system, an advanced method to represent an intelligently integrated financial management system in the digital era (MOGAHA, 2016). The system produces useful information for understanding the comprehensive picture of national finances and the status of fiscal health by connecting financial systems of various organizations.

- d (digital): digitizing existing budget and accounting functions
- Brain: the centre of national finance and a symbol of intelligence and accuracy.

dBrain consists of a business support system, a central financial information system, a statistical analysis system, an interface with external systems and an open fiscal data system.

### *Development*

- before dBrain's development (2000–2004)
  - Fiscal Information Management System "FIMSys" (2001): a system operated by the former Ministry of Planning and Budget, which focused on budget allocation capability.
  - National Finance Information System "NAFIS" (2002): a system operated by the former Ministry of Finance and Economy, which focused on national fund operation such as fund management and accounting settlement.
- decision to build an integrated financial management information system (2004–2007)
  - A national agenda meeting chaired by the president decided on the establishment of a digital budget and accounting system.
  - Along with the adoption of the National Fiscal Management Plan (medium-term expenditure framework), one of the four major reforms was the adoption of an integrated financial information system that is essentially a top-down budgeting and performance management system (2004).

    - A task force for the Digital Budget and Accounting System was formed (2004).
    - Develop of the Integrated Financial Management Information System began (2005).
    - The Digital Budget and Accounting System project was implemented.
    - business process re-engineering (BPR) and information strategy planning (ISP) were carried out; a programme budget structure was set up for all central government agencies.
    - Operation of the Digital Budget and Accounting System began (2007).
- implemented system enhancement (2007–2013)
    - A performance management system (sub-module system) was upgraded (2011).
    - An integrated infrastructure monitoring system built (2012).
- development of National Treasury-funded subsidies management system (2014–2017)
    - Development of the open fiscal data system commenced (2015).
    - The system was completed (first half of 2017).

### *Service description*

dBrain is an integrated financial information management system, which combines revenue, expenditure, national property and settlement functions. It has made the entire public finance management process far more efficient and systematic with its electronic bill presentment and payment (EBPP) function and electronic funds transfer (EFT) function, which enable users to conduct all transactions online (e.g., pay taxes, make programme expenditures for various government projects) without having to see government officials in person. The detailed service contents of the dBrain system are as follows.

- improved data accuracy through full-scale system integration
- improved convenience through complete systemization
- improved efficiency by managing budget execution through the programme management system

The detailed service systems of dBrain are composed as follows.

- programme management system
- revenue management system
- budget management system
- expenditure management system
- fund management system
- national assets/goods management system
- accounting settlement system
- statistical analysis system
- performance management system

- open fiscal data system
- National Treasury-funded subsidies management system

### *Major achievements*

As of 2019, dBrain is used by more than 70,000 government officials every day. dBrain contributes significantly to the improvement of efficiency, transparency and participation in relation to the operation of financial information in South Korea as follows.

- as dBrain is connected to 64 external systems of 45 institutions, efficiency and transparency have been improved in public finance management such as tax collection and fund transfers
- system users are free from repetitive input of the same or related information,that is, once entered, the budget data is traceable throughout the entire budget process from formulation to execution
- opportunities for citizen monitoring and participation are increased, fiscal performance has been improved and financial waste has been decreased, all of which lead to tax savings for citizens

### *Awards*

- international organizations and governments praise dBrain as a best practice for transparent and efficient financial management
- in 2013, dBrain was selected as the first-place winner of the UN Public Service Awards in the category of "Promoting Whole-of-Government in the Information Age" for the Asia-Pacific region

## Information disclosure system (www.open.go.kr)

The Official Information Disclosure Act was passed in 1996 in South Korea, and has been implemented since 1998. This Act is the thirteenth in the world and the first in Asia. However, electronic information disclosure has been made by information systems since the early 2000s.

### *Overview*

The information disclosure system aims to ensure the public's right to know and to ensure the transparency of public administration and public administration by publicly disclosing information held and managed by public institutions.

The South Korean government enacted and promulgated the Official Information Disclosure Act on December 31, 1996 which took effect on January 1, 1998. It is the first information disclosure system in Asia and the thirteenth in the world. In 2004, the South Korean government set up legal grounds for electronic information disclosure so that citizens could access information on public

institutions more conveniently and promptly. In order to expand the accessibility of information to the public, an information disclosure system (www.open.go.kr) focused on public amenities was established and supported since 2006 so that it could be used to conveniently request information disclosure online (MOI, 2016b).

Since then, the government has continuously improved information accessibility for its people by proactively improving the system such as through advance information disclosure and original information disclosure. As of 2019, the information disclosure system has shifted to a search-based approach through pre-information disclosure and has reached the level of integrating original information from all government agencies, educational institutions, public enterprises and semi-government agencies.

### *Development*

In order to proactively respond to the rapidly increasing public disclosure requirements, the South Korean government revised the Information Disclosure Act in January 2004 and introduced the grounds for electronic information disclosure in order to facilitate the disclosure of information online in a rapidly changing knowledge information society.

Based on these changes, the ISP project for the public disclosure of administrative information was promoted from October 2004. By 2008, the total budget for this system construction project amounted to $5.8 million. The contents of this project are briefly listed below.

- establishment of ISP for the expansion of online information disclosure (October 2004–February 2005)
- first phase of the construction of an integrated information disclosure system (October 2005–April 2006)
- second phase of the construction of an integrated information disclosure system (October 2006–March 2007)
- third phase of the construction of an integrated information disclosure system (September 2007–March 2008)
- law and institutional aspect revision; in January 2004, the government amended the Public Information Disclosure Act to provide a legal basis for expanding online administrative information disclosure

### *Service description*

These systems provide information held and managed by public institutions to citizens in a convenient and prompt manner with the aim of expanding their right to know and enhance transparency in public administration (MOIS, 2018).

- information disclosure before request
  Public institutions disclose in advance, even before requests are made from citizens, the information on policies that are closely related to citizens' daily

lives and large-scale budget projects, which citizens are likely to be highly interested in. It provides the information title and link for users to conveniently look up the list of information already disclosed on the website of each institution.

- information disclosure in its original form
  The system provides the original texts of documents produced in public institutions on a real-time basis, which are classified as information to be disclosed and approved by director-level executives or higher.
- one-stop-shop service
  Once a request is filed, the institution holding the information reviews whether or not to disclose the information, notifies of the decision and provides requested information. The process of search, request and perusal is all offered at a one-stop shop.
- mobile service
  There is also a mobile service, through which citizens can request information without restrictions of time and place, and can check results (launched in June 2017)

***Major achievements***

Currently, the utilization rate of the information disclosure service through the information system is rapidly increasing. This is the result of the continuous upgrading of related information systems over the years.

- continuous increase in demand for information disclosure
  The number of requests for disclosure of information has continued to increase. In 2017, 855,021 requests for disclosure of information were received, an increase of 13.0 per cent from 756,342 in 2016 and about 32 times that of 26,338 in 1998 when the Information Disclosure Act was first implemented.
- increasing use of online information disclosure services
  There are various methods of claiming information disclosure such as direct visit, postal mail, fax and through information communication networks. Until 2007, 48 per cent of all claims were made by people in person or by mail, but since then online requests have continued to increase, accounting for about 77 per cent of the total In 2017. Others were direct visits (16 per cent), fax (5 per cent), postal mail (2 per cent) etc.
- activation of the original text disclosure system
  Since the original text disclosure system was implemented in March 2014, it spread from government agencies to public institutions in three years. The number of downloads of original text information increased by 6.7 times from 500,000 (1,811 daily averages) to 3.36 million (9,354 daily averages) in 2017. The original text of the public documents produced by an agency was opened to the public with a single approval, thus creating a new turning point for information disclosure to enhance transparency in the administration of the government.

## The Information Network Village (INVIL) (www.invil.org): a self-sustaining village community enabling continued growth

The Information Network Village (INVIL) project is unlike any other case discussed above and some may question whether it should be in the list of best practices. This is because the South Korean government is no longer actively pursuing INVIL policies. Nevertheless, the author presents this policy as a best practice because I believe it is still relevant to many developing countries.

The Information Network Village (INVIL) project did not involve the installation of information systems. Therefore, in many cases, it tends not to be included as a South Korean e-government initiative. However, over the past two decades, the INVIL policy has become a prime example of South Korea's digital divide policy. It also contributed to the informatization of the local community, starting with the improvement of economic life for many local residents. Recently, the South Korean government announced that it will no longer support these INVIL policies. However, INVIL is introduced here as the last case in the belief that it could provide meaningful implications for the informatization of developing countries.

### *Overview*

The Information Network Village (INVIL) project was one of the main projects for rural informatization, which aimed to close the information divide, raise community incomes and improve the quality of life in rural areas by introducing e-commerce (MOPAS, 2012). As of March 2014, 357 INVILs had been established in farming and fishing villages around the country. INVIL is a project establishing self-sustaining village communities that are capable of continued growth by creating information network environments and improving the income of residents through e-commerce in agricultural, fishing and mountain regions usually excluded from information networks. As of 2019, 363 villages had been created and were operational from 2001 to the present.

The seven main areas of the INVIL project were as follows:

- to establish IT infrastructure
- to build village information centres
- to distribute free PCs to households
- to provide training for residents
- to develop information contents
- to establish an operation organization
- the development and marketing of a biz model

### *Development*

The INVIL project was not a project to build an information system, but rather to disseminate equipment and expertise to support local development and

economic improvement of residents. Therefore, the process of increasing the number of target villages each year was more important than the system construction process.

Since 2001, the INVIL project has experienced continued growth by meeting the demands of the times.

- step 1: reduce the digital divide between urban and rural regions.
- step 2: set up a foundation for economic self-reliance through e-commerce and serve as a model for regional development.
- step 3: rstablish a participatory management system; provide the organizational structure for villages to self-manage.
- step 4: social integration for immigrants, operational expansion and cultivation of self-sustaining village communities.
- step 5: spread the information network globally to create the "2nd Saemaeul Movement" of the information era

The INVIL policy, established after the 2001 Master Plan, was implemented from 2002.

- first stage (2002): completed 25 INVIL information contents construction projects.
- second stage (2003): completed 78 INVIL information contents construction projects.
- third stage (2004): completed 88 INVIL information contents construction projects.
- fourth staeg (2006): completed 89 INVIL information contents construction projects.
- fifth stage (2007): completed 26 INVIL information contents construction projects.
- sixth stage (2008): completed 34 INVIL information contents construction projects.
- seventh stage (2009): completed 30 INVIL information contents construction projects.
- eighth stage (2010): completed 12 INVIL information contents construction projects.
- ninth stage (2011): completed 4 INVIL information contents construction projects.

### *Service description*

In order to provide INVIL service, first of all, information infrastructure such as broadband networks, community information centers and websites were been established. Moreover, ICT education and consulting services were also provided for local residents to use the infrastructure. Furthermore, information contents were developed, closely related to everyday life and economic activities such as

e-commerce. Through these infrastructures, target community villages could achieve the following goals.

- reduce the digital divide
  - the average age of residents in INVIL villages is over 60 years old. However, through information network education, many elderly people are receiving education over the internet, researching and learning farming tips, shopping, having conversations with acquaintances in real time and enjoying a variety of informational content throughout their daily lives. Moreover, they are now able to receive civil petition services in their homes instead of having to visit governmental offices, and residential participation has been revitalized through various forums.
- provide a basis for economic self-reliance
  - through minimizing distribution margins and increasing the village's income by using the internet and cutting out the middle man, lower prices for fresh agricultural, fishing and mountain goods were achieved for the urban consumer. Such changes increase the profit margin for villages and act as a stimulant for encouraging active participation from village residents.
  - - through the "continued growth" pursued by the INVIL project, growth could be standardized upward for the whole village, to be verified accurately by the changes in sales development.
- establish a participatory management system
  - an organizational structure was provided for villages to self-manage a sustainable village community.
  - the Central Council of INVIL, the representative structure of all INVIL villages, is comprised of representatives from all 363 villages and handles the agendas and decision making on matters relating to information network villages. Furthermore, in the event that this project is handed over completely to the public, it readies itself for the autonomous operation of the project.
- support social integration of immigrants
  - INVIL is supplying online educational content for immigrants consisting of South Korean cultural education in five languages including Mongolian and Vietnamese through partnership with Korea Digital University (KDU).
- spread INVIL globally
  - the INVIL project is regarded as a "2nd Saemaeul Movement" (which led the economic revival of South Korea in the 1970s) in the knowledge-information era and is gaining legendary status among IT workers, public officials and academic experts visiting from various countries.

### *Major achievements*

The INVIL project has two main policy goals. The first is to bridge the digital divide between regions and classes. The second is to generate income for residents

and revitalize the local economy. E-commerce sales significantly grew each year through www.invil.com and www.tour.invil.com, contributing to the income increase of rural residents. In fact, as agricultural and fishery products have certain problems in terms of production period, storage and transport, they are not perfect goods for online sale. Moreover, local residents have little understanding of e-commerce. Despite these problems, however, online sales are on the rise thank to education on e-commerce, service stabilization and monthly and holiday promotion events. The major achievements in this respect can be summarized as follows.

- a bridging of the digital divide between regions and classes
- the generation of income for residents and revitalization of the local economy

### *Awards*

- World e-Government Forum "e-Government Special Award", France (2006)
- first place in the UN Public Service Awards, Tanzania (2011)

## Case Study: the Open Data policy in South Korea

Since the Obama administration in the United States began to actively pursue Open Government policies in 2013, the South Korean government followed suit and actively promoted Open Data policies. South Korea has been operating a public data portal (www.data.go.kr) since its establishment in June 2011. In accordance with the global trend, the Act on Promotion of the Provision and Use of Public Data (hereinafter referred to as the "Public Data Act") was enacted in July 2013. Currently, South Korea is recognized by the OECD as a leading country in the field of open public data.

The public data portal provided by the South Korean government is an integrated single window that provides in one place the data that public institutions create, acquire and manage. The portal provides various methods such as file data, open API and visualization so that the public can easily and conveniently use public data. Anyone can find the desired public data quickly and easily through the easy and convenient search function. According to the Public Data Act, public data provided by the public data portal is available for everyone and for free use, including for-profit purposes.

The South Korean government has established and operates the Open Data Centre as an organization to support Open Data policy. This centre is a public institution dedicated to publishing the data of public institutions and enabling private sectors to utilize it. The centre is equipped with expertise related to generation, publication, utilization and expanstion of open data, providing high-quality service at the contact point of public and private sectors. It has performed the role of general support for the creative utilization of the private sector. The main tasks of the Open Data Centre are as follows (MOI, 2016b).

1. the provision of open data and the use of policy, research institutions and research.
2. the research and analysis of statistics relating to the provision and use of open data.
3. the management of the registration and information of the open data list.
4. the establishment of the open data portal, management and utilization promotion.
5. diagnosis and quality assessment and improvement of open data, standardization of support.
6. the provision of open data maintenance forms and the provision of ways to build support.
7. provision of consultation in the use of open data.
8. identification and use of the open data services model through activation support.
9. provision of open data, using publicity and education and training.
10. provision of data on public–private partnerships and international cooperation support.
11. management of the Open Data Strategy Committee, support of Mediation Committee in mediating disputes.
12. prevention of misuse and abuse of data disclosure.

The South Korean government also operates the Open Data Portal, established in 2013. The Open Data Portal is an integrated site that provides open data, as generated or acquired by public agencies, in one place. The portal provides various data types such as files, open APIs and data visualizations to allow easy use. Moreover, anyone can find open data via an easy and convenient search engine.

## Lessons learned: characteristics of future-oriented digital government projects – the case of South Korea's National Information Resource Service (NIRS)

Implementing digital government involves bringing new ICT into the public sector and innovating it as a whole. Today, the National Information Resource Service (NIRS) is called the heart of e-government in South Korea and is considered a real success story (MOIS, 2017b). Currently, the NIRS is centrally managing all servers of 48 central ministries in South Korea. NIRS secures the world's highest level of integrated computing resource management.

However, back in 2001, when the project was selected as the eleventh e-government project by the Kim Dae-jung administration, many experts were sceptical. In 2001, no ICT company in the world was promoting cloud or big data.

Nowadays, many companies – starting with Amazon and including IBM, HP and Oracle – bring their servers together to provide cloud services. Nonetheless, at that time, it was considered a very dangerous idea to provide services that bring together servers managed by government departments in one place.

However, it was very urgent to establish an integrated computing environment in the public sector. The reason for this was that until 2000, informatization in South Korea had been independently pursued by individual ministries. The capacity of operating manpower was different for each department and the size and management environment of departments varied widely. In addition, since each institution established an information system separately, the information budget was often duplicated in similar tasks. In particular, the number of servers managed by one person was only about one-tenth of that of private advanced companies and the efficiency of information resource operation was very low. The bigger problem was that different departments had different security levels, and the vast majority of information systems were exposed to cyber threats such as hacking and viruses.

As a result, in 2001, the South Korean government implemented the world's first integrated government data centre project to build a stable e-government foundation that could grow in the future. In 2002, the government-wide innovation plan (BPR) for an integrated computing environment was prepared. In 2003, the government's integrated computing centre construction project was included and adopted as part of the "31st e-Government Roadmap". In July 2004, starting with a specific ISP for the establishment of an integrated data centre, the Daejeon Centre was finally launched in November 2005. The information systems of 24 central administrative agencies were completely moved to the Daejeon Centre by October 2006.

In November 2007, the second centre in Gwangju was completed. In the Gwangju Centre, the rest of the 24 ministries' information systems were relocated, and by the end of 2007 nearly all central administrative agencies' information systems had been successfully distributed to the two data centers.

Ten years later, in 2019, South Korea's NIRS had secured the status of the world's best integrated computing center. The promotion of the NIRS project in 2001 was filled with uncertainty and risk. The South Korean government, however, approached the project from a future-oriented perspective and laid the foundation for success through continued investment.

National projects that consider implementing digital government should be analyzed and determined from the perspective of the future rather than examining the feasibility of implementation from the current perspective. In particular, with the advent of intelligent information technology, uncertainty is increasing in the digital government's policy promotion. In this regard, the success of South Korea's NIRS is a prime example of a future-oriented digital government project.

## Notes

1 The best practices of South Korea's e-government covered in this chapter are all based on promotional materials officially released by the South Korean government.

2 "On-nara" means the nation, and that all government agencies around the country process business online. "On" also means the system is "on". This means that government business is executed all the time, overcoming limitations of time, space and barriers across government agencies.

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# Part IV

# Critical success factors in South Korea

# 9 Politics, leadership and ICT governance

## Introduction

In the past, at the stage of computerization, computers were introduced and used for one application in one department, and electronic services delivery was provided to the public through the internet. But now, pushing the digital government forward is not just about introducing computers or the internet into government affairs. Neither is implementing digital government limited to the functions of any one department. In fact, driving digital government means the overall transformation of government.

In essence, implementing digital governance involves a change in the way administrative functions are performed across the government, resulting in a significant degree of change in administrative structure and a change in civil servant awareness. Therefore, the implementation of digital government is not to stay at the level of introducing information technology to individual administrative organizations but to redesign the process of administration by using information technology and to change the process of administration to pursue the transformation of the whole government. Therefore, the implementation of digital government is not merely to introduce information and communication technology to the public sector but to pursue overall government innovation.

What is emerging today in this process is the use of new intelligent information technology. We have pursued smart work using big data and cloud computing so far, but now we are entering a new world that we have never experienced before using intelligent information technology. Moreover, this smart intelligent digital government also needs a new form and way of operation. Therefore, it is necessary to derive the success factors from the past experiences of South Korea and to utilize them positively in the future.

And this can be achieved through the leadership of the top leaders, which is embodied by emphasizing the importance of government innovation that utilizes information technology in all ministries. Therefore, the greatest success factor in the implementation of digital government is to secure the leadership of the top leaders. In this process, a clear vision of digital government implementation must be presented by the leader. This vision should be set to achieve government

innovation through the implementation of digital government and to promise a more convenient and transparent government future for the people.

Based on this clear vision, specific strategies and action plans should be pursued. As such, it is necessary to construct a strong driving system based on the leadership of the top leaders to secure the sustainability of digital government. An ICT body, composed of competent experts, should support the implementation of these visions and strategies. Of course, these success factors are not mutually exclusive. In South Korea, frequent change in the government ruling party has created a structure that fails to guarantee political sustainability in information policy. Therefore, the factors of digital government implementation have influenced each other in accordance with government change. In particular, ICT governance has changed steadily for all governments.

The political and organizational success factors of digital government implementation, focusing on South Korea's past experiences, are summarized by the following chapter headings.

- the political characteristics of digital government: as a presidential project and national agenda
- the presidents' leadership on government innovation through digital government
- the composition of a strong cross- and joint governmental promotion system: a committee approach
- the excellence of the NIA: securing excellent professional organization expertise

## The political characteristics of digital government: as a presidential project and national agenda

Twenty-three years ago, I conducted research on the factors of e-government success in South Korea (Chung, 1997). As a result of this study, it was suggested that the leadership of the top leaders is the most important factor for the success of e-government. Since then, many studies have emphasized the same conclusion (Accenture, 2001; Heeks, 2006; Sogaard, 2002). However, in South Korea, what was more important than these leadership factors was the political aspect inherent in digital government implementation.

The implementation of digital government is not simply about a computerized government. Unlike the simple computerization of the past, the implementation of digital government is a complex and difficult process. The challenge of digital governance, such as the introduction of ICT into government and the promotion of government innovation, is having an agenda beyond the individual boundaries of one department, one organization and even single legislative, administrative and judicial institutions. The results of digital government projects also affect many ministries, citizens and the whole country. These digital government initiatives are basically less likely to succeed. In particular, it is difficult for a project that greatly changes the existing organizational structure or business practices

to succeed. This is due to conflicts of interest and resistance to change rather than the technical difficulty of the project.

From this point of view, in order to successfully implement digital governance, we must approach from a highly political perspective. In the case of South Korea, the successful implementation of digital government was made possible because the government's e-government projects were conducted as presidential projects and part of a national agenda. Based on this political point of view, the following is a brief summary of the situation in which the digital government in South Korea has proceeded as a presidential project and as part of the national agenda.

### *The Kim Dae-jung administration (1998–2002)*

The Kim Dae-jung administration, which came to power in 1998, focused on economic recovery such as financial reform, corporate reform and labour reform in order to overcome the Asian financial crisis. Therefore, it was in an environment that made it difficult to focus on policies related to the digital government. However, this policy trend changed rapidly in the wake of the new millennium in 2000. The reason was that stakeholder groups appealed to the "fatigue of reform" in the four major programmes that continued in 1998 and 1999, with the drive for reform weakening in the latter half of the regime.

Therefore, in 2000, the Kim Dae-jung administration concluded its hardware-based restructuring programmes that centred on labour reduction and privatization of public enterprises for over two years. Subsequently, the reform work shifted from a hardware-approach reform to a software-approach reform, from restructuring to re-engineering. In this process, a means to achieve the software-approach reform was required, for which e-government was promoted. Therefore, for two years from 2001, the Kim Dae-jung administration promoted e-government projects as a presidential agenda and as part of the national government agenda of innovation (Ahn, 2017).

This was the first time that the implementation of e-government and digital government in South Korea was promoted as a presidential project. The adoption of the projects for digital government as the president's agenda resulted in a strong driving force, including budget support and the successful completion of projects. In South Korea, where the president is highly empowered, implementation projects of digital government were pursued with great emphasis directly because of their status as presidential initiatives.

Therefore, in 2000, the Kim Dae-jung administration adopted government innovation through e-government as a new national government agenda and encouraged all government ministries to follow suit. Subsequently, in 2001, the Special Committee for e-Government was established as a presidential organization and e-government projects were promoted as the presidential agenda.

As such, the project's strong resulting driving force enabled them to be completed successfully.

### *The Roh Moo-hyun administration (2003–2007)*

The Roh Moo-hyun administration, which took power in 2003, came from the same political party as the former Kim Dae-Jung administration. However, the policy framework for implementing the digital government was completely different. The Kim Dae-jung administration was unable to give priority to digital government policies since it had to overcome the Asian financial crisis in the early days of its term. However, the Roh Moo-hyun administration set the e-government policy as the presidential agenda and simultaneously strongly promoted it. The reason for this can be analysed in connection with the political base of the Roh administration.

The Roh Moo-hyun administration strongly pursued government innovation by advocating for participatory government. In this process, e-government policies were promoted as a means for administrative innovation using ICT from the beginning of the administration. Since the opposition party occupied the majority seats in the National Assembly, other various reform policies could not be carried out due to the opposition party's objections. However, in the case of e-government policy, there was no concern of disagreement from the opposition party because it was a policy that was necessary to respond to the arrival of the knowledge society and to innovate the government. Therefore, it had the advantage of being promoted more easily and quickly than any other policy.

Therefore, the Roh Moo-hyun administration made tremendous efforts to maximize the effect of government innovation by using ICT to link government innovation and e-government. In order to do this, an e-government special committee was set up within the government innovation local governance committee, an advisory body established in April 2003 by a Presidential Decree, announcing the e-government roadmap in August. According to the e-government roadmap, the goal of realizing participatory democracy, establishing a balanced development society, realizing the era of Northeast Asia, and attaining the income of $20,000 was proposed to achieve the national vision and goals. To this end, the e-government sought to implement advanced administration by pursuing transparent administration through innovations in the way public employees work, efficient administration through the innovation of information resource management and participation in information service innovation.

Therefore, in the Roh Moo-hyun administration, the policies of e-government were set as the presidential agenda and as a national project, creating a strong driving force. As a result, the Roh Moo-hyun administration spent nearly $850 million on the 31 e-government projects within five years, and the foundation of South Korea's digital government was completed to became the world's leading example today. The digital government promotion policy was almost the only way that the Roh Moo-hyun government, which had a weak political base at the time, could overcome opposition from the majority opposition party and propel government innovation.

### *The Lee Myung-bak administration (2008–2012)*

The Lee Myung-bak administration, which was launched in 2008, was a conservative government that replaced the progressive government that had been in power for the previous ten years. Along with the launch of the new government, the Lee Myung-bak administration abolished the Ministry of Information and Communication through government reorganization. The rationale for this was that since the establishment of the national telecommunication infrastructure had been completed, information policy was recognized as a common task to be carried out by all ministries and not by a single ministry. However, as a result of this abolishment, information policy and e-government policy were mixed, resulting in a confusion of ICT policies. Especially, in the case of e-government policies, they were regarded as the accomplishment of the previous government and made it difficult to further promote relevant policies.

Therefore, in the 2008 and 2009 ministries' presidential affairs reports, almost no details of e-government were found. Reflecting this trend, the "100 National Agendas in the Lee Myung-bak Administration" announced in October 2008 did not include e-government and national informatization. On December 3, 2008, the Lee Myung-bak administration's announcement of the national IT vision was made but the terms "e-government" or "digital government" were never mentioned. As such, in 2008 and 2009, the Lee administration was overly sensitive to e-government policies, even to the point that the use of the term "e-government" within the government was prohibited. This was in stark contrast to the previous administration; the former Roh Moo-hyun administration had established the Government Innovation Decentralization Committee in 2003 to form five professional committees, one of which was a special committee for e-government that had promoted e-government as a presidential agenda.

The e-government budget of the Lee Myung-bak administration steadily decreased every year. Investment in e-government rapidly reduced from 2008 after the completion of the second phase of the e-government project, which had formerly been a key policy task at the Roh Moo-hyun administration. In 2008, the first year of the Lee Myung-bak administration, the e-government budget was reduced to half of the previous year's amount.[1]

However, a dramatic reversal of policies took place in 2010. As South Korea became the world leader in the UN e-Government Survey in early 2010, the Lee Myung-bak administration began to actively promote digital government policies, including e-government, while advertising e-government promotion as its achievement. Therefore, the existing high-speed information communication infrastructure and the e-government projects that had been started in the previous government were continuously promoted as upgrading projects, thus securing the sustainability of the policy. However, policies related to the digital government were not promoted at the highest level of the presidential agenda.

### *The Park Geun-hye administration (2013–2017)*

In February 2013, the launch of the Park Geun-hye administration was not a replacement of the government; a president from the same ruling party took office. However, many changes occurred in relation to e-government and national informatization. The biggest change in the implementation policy of digital government was the emergence of the Government 3.0 policy. The government set up the national vision and strategy in five major areas as the means of achieving the national vision of "the new era of the nation's happiness and hope".

In early 2013, Government 3.0 was advertised as having no relationship with the existing e-government and was advertised instead as an original policy of the Park Geun-hye administration. In this process, Government 3.0 and e-government were separated, resulting in a loss of driving force due to the lack of government support for Government 3.0 policies from the beginning. In the second half of 2014, a Government 3.0 promotion committee was formed and convergence with the e-government was promoted, resulting in revision of the policy to enhance the existing e-government services. In this process, the e-government budget was continuously reduced to an annual average of $85 million while $255 million was invested in the Government 3.0 policy annually.

Government 3.0 was a policy for the implementation of the digital government and it is obvious that the government was pursuing it as the presidential agenda. However, the implementation of the policy was problematic in terms of its sustainability. The reason for this is as follows. The Government 3.0 policy was not led by government ministries or government officials in the Park Geun-hye administration, but by professionals who participated in election camps during the presidential election. Therefore, although the policy was promoted as a government policy after the government's inauguration, many people tended to perceive it as the policy of President Park Geun-hye. The reason was that the Park Geun-hye administration had emphasized that the Government 3.0 policy was different from the e-government policy of the previous government by advertising it as a policy that was found nowhere else in the world. Thus, Government 3.0 faced a situation where it became unsustainable because it was a policy for one government and a single president, and not a sustainable project with a long-term, shared future.

In conclusion, although the Park Geun-hye administration did not achieve government innovation using information technology from the viewpoint of e-government, it contributed to an Open Data policy through Government 3.0 in the broad sense of digital government. However, as President Park Geun-hye was impeached and his government failed, the administration's digital government policies, including Government 3.0, cannot be regarded as successful.

### *The Moon Jae-in administration (2017–present)*

In May 2017, Moon Jae-in launched his new administration in a special environment, having been elected president when former President Park Geun-hye

was impeached and imprisoned. Therefore, the government of Moon Jae-in was established without the presidency acquisition committee, and as a result it was not possible to establish a national government plan by evaluating and taking over existing government policies. Also, national agendas were selected after inauguration. In this extraordinary situation, Moon Jae-in had no choice but to concentrate on replacing the government in the early days of his administration.

However, this kind of environment could have ironically created the best conditions in history in terms of administrative reform. As we have seen, although the Kim Dae-jung government had started out after an economic crisis, it had been launched under very good conditions in terms of administrative reform. However, despite the fact that Moon Jae-in was in a very good condition to promote digital government innovation at the time of launching the government, he wasted this golden time on the disposal of the former government's legacy.

The Moon Jae-in administration set as its national vision "The nation of the people, the righteous Republic of Korea". As five national goals were set, digital government and government innovation were not included. "Open Innovation Government, Service Administration" was one of the detailed projects, but this arrangement was partly included among the lower 100 national government projects and cannot be recognized as a central policy agenda. In particular, apart from the top 100 national projects, the most important issue concerns which policies are promoted as part of the presidential agenda. Currently, the Moon Jae-in administration is committed to job creation policies rather than government innovation.

In the second half of 2017, the Fourth Industrial Revolution Committee was formed as a presidential underpinning organization and the emphasis was placed on industrial policy using ICT, such as smart city policies. However, overall government innovation using ICT is not sufficiently pursued.

### *Conclusion*

So far I have looked at the political environment surrounding the digital government policies of South Korea's past 20 years. South Korea has been pursuing various forms of informatization, e-government and digital government policies on the basis of well-established high-speed information communication infrastructure. Therefore, regardless of the changing administrations, the implementation of digital government in South Korea has been continuously pursued as a national agenda. There are many reasons for this.

First, after 2000, South Korea's information infrastructure has been completed, and regardless of the administration change, digital government policies have laid the basis for national policies. Second, it is related to a special cultural environment in South Korea, a social atmosphere that seeks to speed up service and administration "faster and faster". As a means to provide such rapid administrative services, South Korean governments have been forced to implement advanced administrative services and further digital administration. Third, this was possible because the policies of the digital government were the only

policies that could hardly face opposition from the opposition party, irrespective of administration change.

## The presidents' leadership on government innovation through digital government

The first item in the "Guidelines for Successful e-Government" presented in a 2003 OECD report was "leadership and commitment" (OECD, 2003). This is because the implementation of e-government and digital government tasks requires the presentation of a new vision, results in a shocking change in the organization and has a high likelihood of error. In digital government implementation, the exertion of leadership is influenced by various factors and appears in various situations.

From the viewpoint of these various factors, the presidents' leadership on the digital government policy of the South Korean government can be analysed as follows.[2]

### *The Kim Dae-jung administration (1998–2002)*

President Kim Dae-jung believed that if the government can prevent corruption by enhancing transparency of administration and realize a one-stop service for civil affairs through e-government, the people and corporations will recognize the benefits of the reform. In particular, President Kim had great interest in improving transparency through e-government, as is evident in the following presidential speech.

> Implementing e-government is a shortcut to leading countries … if we develop e-government rapidly, we can become the world's best country.
>
> (Ministry of Finance and Economy briefing meeting, January 15, 2001)

> Currently, e-government is in a state of stagnation because of a ministry's selfishness … If e-government is achieved, ours can become a trustworthy government without corruption.
>
> (State Council, May 5, 2001)

Apart from these speeches, in the book published by the South Korean government, President Kim Dae Jung's interest in e-government is shown as follows.

> Without the President's full support for the e-government project, the 11 major e-government initiatives would have been unable to fulfill their goals. President Kim Dae-jung stressed the importance of creating an e-government in his speeches and remarks to cabinet members, ministers, and the people. Every week, the president was briefed on the progress of the e-government project. The strong support and interest shown by the

> president helped smooth the bureaucratic processes across agencies during e-Government Special Committee meetings. This persistent interest of the supreme ruler was the greatest power in driving e-government projects and a source of coordination.
>
> (Special Committee for e-Government, 2003)

As President Kim Dae-jung continued to emphasize e-government, e-government projects in the Kim Dae-jung administration were naturally promoted as a presidential project in terms of administrative reform rather than as mere computerization projects. Therefore, e-government projects in South Korea were promoted as the president's business for the first time in 2001.

One interesting fact is that Kim Dae-jung himself was computer-illiterate. President Kim Dae-jung emphasized the importance of informatization in meetings with many ministers, but he was not able to operate computers himself. The important thing here is that the leader is not the person who implements a project but a person who holds the steering wheel and sets the direction to move forward. In other words, the president's practical knowledge of ICT is not important and real leadership is recognizing the importance of and providing support for using ICT for government innovation.

### *The Roh Moo-hyun administration (2003–2007)*

President Roh Moo-hyun had excellent knowledge of ICT. In the past, when he operated a lawyer's office, he demonstrated his ability to develop an office operation management software programme with a PC. Therefore, he had better understanding of the importance and use of ICT than any other previous president. President Roh Moo-hyun chose ICT as the most important means of government innovation, not merely as a technical or industrial product. Soon after his inauguration, he established the Government Innovation Decentralization Committee directly under the presidency and formed an e-government committee under it to promote e-government projects as a presidential project.

In this process, he directly coordinated conflicts between ministries. He also held government innovation conferences and lecture workshops from time to time to improve the mindsets of senior government officials regarding digital government and government innovation. President Roh Moo-hyun pursued clean and transparent administration and anti-corruption prevention through e-government, as reflected in the following speeches.

> In the future, we will improve the way the public sector works, innovate business processes … It is important to naturally change the functions and organization of government. In addition, active efforts should be made to ensure clean and transparent administration through e-government.
>
> (17 April 2003 National Agenda Meeting)

> It is problem to raise transparency and integrity of administration. The implementation of e-government by Korea and the voluntary reform of public officials will be a driving force for a clean and transparent government. At the ninth meeting in 1999, Seoul's "Online Procedures Enhancement for Civil Applications" was announced as an excellent case of anti-corruption. In addition, I and the Korean government will actively participate in international cooperation on anti-corruption and will cooperate with the activities of the Transparency International.
>
> (Speech to the 11th International on Anti-Corruption Conference (IACC), May 26, 2003)

President Roh Moo-hyun's insights and intentions towards the digital government were reflected in the e-government projects in South Korea and the country's digital government policies achieved great results during the Roh Moo-hyun government. When President Roh Moo-hyun took office in 2003, the UN's e-government ranking of South Korea had remained outside the top ten; it improved to be ranked fifth by the end of his term in 2008 and soon achieved world's top place by 2010. Therefore, the fact that the current level of digital government in South Korea is the highest in the world can be attributed to the leadership of President Roh Moo-hyun.[3]

### *The Lee Myung-bak administration (2008–2012)*

President Lee did not have much insight into the fields of ICT and digital government. Therefore, the Lee Myung-bak government hardly pursued digital government innovation. In a keyword search of former presidential speeches by the presidents of South Korea, none of the speeches by President Lee Myung-bak included the terms "e-government" and "information policy". However, there were policies that were pursued during Lee Myung-bak's presidency in relation to digital government including the smart work policy. This policy was also closely related to low-carbon green growth as emphasized by President Lee. In August 2008, when President Lee Myung-bak took office, he declared in his National Independence Day Celebration Speech:

> Today, 60 years after the founding of Korea, I would like to present "low-carbon green growth" as a new vision. Green growth is sustainable growth that reduces greenhouse gases and environmental pollution. It is a paradigm of new national development that creates new growth engines and jobs with green technology and clean energy.
>
> Green technology goes beyond information technology, biotechnology, nanotechnology and cultural industry technology. Green technology will heal the problem of "jobless growth" by creating a lot of good jobs. The renewable energy industry will create jobs many times more than existing

> industries. In the information age, there has been a gap of wealth, but in the age of green growth, the gap will be reduced.
>
> (National Independence Day Celebration Speech, August 15, 2008)

President Lee Myung-bak, who was formerly a businessman, focused on efficiency through the integration of government ministries and policies. Although the National Informatization Strategy Committee was established and operated directly under the presidency, the policies of the digital government were not carried out on the presidential agenda. Therefore, Lee's insights into administrative innovation and digital government using information technology were not so high. Thus, the president rarely demonstrated his leadership in the field of government innovation using information technology during his five-year term.

### *The Park Geun-hye administration (2013–2017)*

There is little to discuss regarding President Park's leadership in ICT, except for the Government 3.0 policy that the Park Geun-hye administration promoted through digital government and government innovation policy. On July 10, 2012, Park Geun-hye declared her intent to run for presidency. There was no indication of ICT in the prospectus at the time. Then, on January 30, 2013, during the president-elect period, she discussed Government 3.0 in a presidential transition committee meeting as follows.

> "Government 3.0" is a concept whereby the government will communicate various kinds of information in real time to the people and become a "communication government". Government 3.0 means an institutionalized system to disclose all information and knowledge to the public and to share with the people. We will communicate with the people and look for policy direction and problem-solving methods with the people.
>
> (Presidential transition committee meeting, January 30, 2013)

However, Government 3.0 did not not appear in the president's inaugural speech on February 25, 2013. This resulted in a lot of confusion. The government only announced the Government 3.0 vision on June 19, 2013. President Park Geun-hye's speech was as follows.

> Government 3.0 is a paradigm shift that transforms the way the government operates from the nation-centred to the citizen-centred, beyond the level of information disclosure …
>
> If I communicate with the government through Government 3.0 and the private sector, the central government, the local governments and the government departments, I can find clues to solve the difficult problems of our society, and the people's lives can be greatly improved. I have confidence.

> We hope that through the vision declaration today that the government will be able to change our society and make our people happy and enriched by sharing their perceptions and renewing the way the government operates.
> (Government 3.0 vision proclamation ceremony, June 19, 2013)

Therefore, Government 3.0 was promoted as a core national agenda for President Park Geun-hye. At the time, Government 3.0 was an open administrative reform project aimed at actively opening and sharing public information and eliminating government divisions. Government 3.0 was a specific policy for the implementation of digital government, but the reason for its failure could be the lack of leadership from President Park Geun-hye.

From the viewpoint of leadership, it cannot be said that President Park had a strong will or insight on using ICT for government innovation.

### *The Moon Jae-in administration (2017–present)*

The current president, Moon Jae-in, took office under a special situation caused by the impeachment of the former president. In his inaugural address on May 10, 2017, Moon Jae-in announced that he will "boldly break away from the erroneous practices of the old era. I myself as president will be renewed…". However, he did not mention anything about ICT. In October 2017, he organized the Fourth Industrial Revolution Commission, which is directly under the presidency, and made the following comments in the opening ceremony.

> I hope that the launch of the Fourth Industrial Revolution Committee will create a blueprint for innovation growth and serve as a starting point for finding future growth engines for our economy … The government has established a small venture business ministry to concentrate its national capabilities in responding to the Fourth Industrial Revolution, and the Fourth Industrial Revolution Commission, which will act as a control tower, is also launched today … Just as we made the information age of the 2000s an opportunity to leap forward our economy, let us make the future the era of the Fourth Industrial Revolution. Let us make the wave of intelligent informatization an opportunity to innovate our industry and society …
> (October 11, 2017)

On this occasion, President Moon Jae-in revealed his will to grow the economy by fostering ICT industries such as AI, IoT, big data, autonomous vehicles and drones. However, he did not show how ICT would connect with government innovation.

In March 2018, he held the Government Innovation Strategy Conference and made the following remarks.

> Compressing our government's top priorities for innovation in one word can be said to restore the publicness of government and public service. It is

> to establish the relationship of the people, the government, and the public office properly. I would like to emphasize that it is the foundation of government innovation that our government seeks to establish a government culture that truly exists for the people, and that is truly the public service of the people. The restoration of the public sphere of government and public service will be the end of corruption. Therefore, we have no choice but to start innovating from correcting past corruption …
>
> (First Governmental Innovation Strategy Conference opening speech, March 19, 2018)

Therefore, the Moon Jae-in government demonstrated the problem of separately pursuing ICT and government innovation policies. This shows that President Moon Jae-in does not have a solid understanding of ICT-based government innovation nor the implementation of digital government. Therefore, it is hard to expect the current president to exert leadership related to ICT and digital government policy.

## The composition of a strong cross- and joint governmental promotion system: a committee approach

In South Korea, the digital government's implementation system has constantly changed according to the previous administrations' circumstances. In terms of the digital government implementation policy, it is unusual in the South Korean context that the committee organization was established separately from the existing government ministries. Therefore, this ICT governance practice is highly likely to continue in the future.

In this process, it was necessary to clarify the roles among the organizations involved in the promotion of digital government policy. The reason for this is that the functions, ranging from policy formulation, deliberation, coordination and evaluation, were dispersed between the legislated promotion system and the actual promotion organizations and thus required coordination. Especially, due to the rapid recent development of intelligent information technologies, convergence and collaboration among various ministries is necessary in ICT policy. Therefore, more robust ICT governance is also required. The process of change and the problems of ICT governance in South Korea for the last 30 years are as follows.

### *Prior to the e-government project (1980–1992): the National Basic Information System Steering Committee; the National Basic Information System Project*

Since the mid-1980s, South Korea's information policy has undergone a major change. In the mid-1980s, the five major national basic networks (administrative network, defense network, public security network, educational research network and financial network) were promoted. Among them, the administrative

computer network project basically prohibited the individual development and operation of computing resources for each ministry and constructed a network of all the computer resources in the public sector that was centred on five national computer networks.

At this time, in order to embody the new paradigm, the Act on the Expansion of Dissemination and Promotion of Utilization of the Information System (abbreviated as the NBIS Act) was made in 1986 and became the framework for informatization in the 1980s. Based on the NBIS Act, the National Basic Information System Steering Committee was formed. The activities of the National Basic Information System Steering Committee have been regarded as contributing greatly to the informatization of South Korea at the time.

The National Basic Information System Steering Committee, which was the proponent of the five major national basic networks project, was initially supported by the president. The committee had a unique form of leadership that was chaired by the president's chief of staff. This meant that the initiative of the informatization policy, which had been previously led by the Economic Planning Board, had risen to the level of the president at this time. The National Basic Information System Steering Committee, which wielded strong power, introduced the budget allocation and execution method that encouraged "investment first and settlement later" in the budget system, and strongly promoted informatization. As a result, it was able to overcome the objections of ministries and civil servants from the beginning and succeeded in making databases of major government administrative information. However, as the administration changed in the late 1980s, the National Basic Information System Steering Committee was weakened and debilitated while the Committee Secretariat was transferred from the Blue House to the Ministry of Communications and lost controlling power over the ICT sector.

### *Prior to the e-government project (1993–1997): the Kim Young-sam administration; the Information Promotion Committee*

With the launch of the Kim Young-sam administration in 1993, the implementation of South Korea's information policy resumed in earnest. The first important change was the expansion of the Ministry of Post to the Ministry of Information and Communication as part of the reorganization of the government and the integration of the functions related to the informatization of the government. The second change was the reorganization of the NBIS Act and the establishment of the Framework Act on Informationalization Promotion.

This change had the following important implications from the viewpoint of information policy. First, the main actors of ICT policy changed from the president's office to the Ministry of Information and Communication. Second, the need to find concrete policy contents comparable to the visible national infrastructure network was raised and the construction of a high-speed information communication network was adopted as the policy. Third, since the real-name financial system and the real-name estate system, which were the core reforms

promoted by the Kim Young-sam administration, are all based on computerization, computerization was further promoted from the means of development to an important means of policy enforcement.

In April 1994, the South Korean government established the government-wide broadband information communication network committee, with the prime minister as chairperson, and institutionally supported national informatization. In addition, the "Framework Act on Informationalization Promotion" was enacted in August 1995, and since the enactment of the law in January 1996, the former deputy-level National Basic Information System Steering Committee was replaced by the ministerial-level Information Promotion Committee chaired by the prime minister. Until April 2009, the Information Promotion Committee coordinated ICT projects that were previously pursued by each ministry. However, due to the limited role of the prime minister in the presidential system and the difficulty of policy coordination between ministries, the functions of the committee for informatization have been inconsistent.

### *The e-government project from 1998 to 2002: the Kim Dae-jung administration; the Special Committee for e-Government*

After Kim Dae-jung's inauguration in 1998, his administration paid full attention to e-government projects from the end of 2000, when efforts to overcome the economic crisis succeeded. In order to promote interagency collaboration in negotiating issues concerning the e-government initiative, the Special Committee for e-Government was created in January 2001. The Committee was a joint civilian–government project within the supervision of the Presidential Commission on Government Innovation, which is an executive branch of the president.

The main structure of the Special Committee for e-Government was based upon the committee's working-level group, which consisted of civilians and directors of agencies. To support the working-level group, two working-level co-heads were appointed – one civilian and one high-level government employee.

Various task force teams were formed within the Special Committee for e-Government to coordinate the many issues that surfaced among the government agencies. A team for system integration was appointed to set a compatible standard for the links between the systems developed for the 11 e-government initiatives. In addition, the legislative team recommended the necessary supporting legislations, the Project Management Council (PM Council) coordinated interagency collaboration and a system testing team checked the online government services of each e-government project.

The Special Committee for e-Government selected 11 major e-government initiatives in 2001 and ensured that interagency collaboration and coordination of the different e-government initiatives proceeded as planned.

As a result of these efforts, President Kim Dae-jung held a meeting for the "Report on the Completion of e-Government Infrastructure" on November 13, 2002 with all ministers from each participating ministry in attendance. President

Kim announced that the 11 major e-government initiatives had been successfully executed and declared the opening of full-scale e-government services.

This type of activity of the e-government special committee can be presented as a representative success case that overcame many difficulties such as revision of relevant laws and regulations, persuasion of stakeholders, resolution of technical problems and completion of the already set objectives within a defined time period.

### *The e-government project from 2003 to 2007: the Roh Moo-hyun administration; the Presidential Committee on Government Innovation and Decentralization*

On April 7, 2003, the Roh Moo-hyun government established the Presidential Committee on Government Innovation and Decentralization (PCGID) under the president's direct orders. The tasks of the PCGID were to manage major innovation projects such as administrative reform, personnel administration system reform, decentralization, finance and tax system reform and the promotion of e-government.. The Roh Moo-hyun government's e-government promotion system changed little by little from 2003.

#### *The e-government professional committee (2003–2005)*

The e-government professional committee, which was launched in mid-2003, developed the e-government roadmap of the president's agenda that focused on 31 tasks in ten fields and examined, evaluated and coordinated the execution process. Related ministries such as the Ministry of Government Administration and Home Affairs were in charge of administrative and financial support and the Korea Computerized Agency was in charge of technical support. However, the important issues were settled at national agenda meetings at which the president was present.

At the beginning of the Roh Moo-hyun administration, the e-government professional committee was set up in parallel with four other professional committees as a secretary-level subcommittee within the PCGID. The number of civilian committee members of the professional committee also increased to 15, twice the number of the former Kim Dae-jung government's Special Committee for e-Government members.

However, in contrast to the fact that the past Committee had been granted independent status at the vice-ministerial level, the e-government professional committee did not exercise strong coordination ability because it had limitations as a subcommittee. This was due to the fact that its legal and institutional status as well as operation and resource procurement status had been significantly lowered compared to the past.

#### *The e-government special committee (2005–2007)*

The first phase of the Presidential Committee on Government Innovation and Decentralization (PCGID), which finalized and promoted the government

innovation roadmap, was dismantled and the second phase of PCGID was launched in April 2005, accompanied by major changes in the e-government promotion system. The first phase of PCGID had been centred on six professional committees on administrative reform, personnel reform, e-government, financial taxation, innovation management and records management. However, in the second phase of PCGID, six sectoral professional committees were disbanded. Instead, two functional committees were formed, including the innovation planning committee and the innovation evaluation committee.

As a result, the e-government special committee was re-launched by upgrading the e-government roadmap to the vice-ministerial level, taking over the roles and functions of the e-government professional committee. The re-launch of the e-government special committee was based on the experience of the former Kim Dae-jung administration, the trends of developed countries, enormous national tax commitment to e-government projects and recognition of the importance of coordination among ministries and agencies.

In June 2005, a second e-government special committee was established, including three deputy ministers from the Ministry of Government Administration and Home Affairs, the Ministry of Information and Communication and the Ministry of Planning and Budget, as well as 13 civilian members. At this time, the Office of the Presidential Secretariat also established the Innovation Management Office, which oversaw government innovation and e-government.

Therefore, although the structure of the propulsion system seemingly had power, it had limitations in coordinating the e-government projects among the ministries. Therefore, the Innovation Management Office intervened in January 2006 to transform the function and role of the e-government special committee into a pure presidential advisory function and all executive functions related to e-government projects were transferred to the Ministry of Government Administration and Home Affairs.

### *The digital government project period from 2008 to 2012: the Lee Myung-bak administration; the National Informatization Strategy Committee*

The Lee Myung-bak administration dismantled the Ministry of Information and Communication and transferred the functions of national informatization to the Ministry of Public Administration and Security. In addition, as the existing Presidential Committee on Government Innovation and Decentralization (PCGID) was dismantled, a new informatization promotion system was needed. However, since the revision of the Framework Act on Informatization Promotion and the enactment of the Framework Act on National Informatization were delayed, the Lee Myung-bak administration's national informatization promotion system gradually changed from 2008 onwards.

Under the Framework Act on National Informatization, the Lee Myung-bak administration established the National Informatization Strategy Committee as a national informatization promotion system in November 2009. The National Informatization Strategy Committee was established under the president's

office to discuss matters related to the promotion of national informatization. Its chairman co-operated with the prime minister and the civilian committee was appointed by the president, with a limit of 35 members including the chairman.

In addition, one secretary (Vice Minister) was appointed for the efficient operation and support of the committee and was in charge of the Public Administration and Security. Eleven National Informatization Strategy Working Committees were established to review and implement the proposed agendas.

The National Informatization Strategy Committee oversaw the coordination of informatization policies, and carried out the tasks of establishing and implementing the national informatization plan and implementation plan, and coordinated disagreements among ministries. To this end, the implementation plan of each department was reviewed in advance and managed by means of performance review.

The First National Informatization Strategy Committee hardly performed in relation to government-wide national informatization and the committee as a whole did not function except that it reported the smart work activation strategy to the president on July 20, 2010 (National Informatization Strategy Committee, 2011).

Therefore, the Second National Informatization Strategy Committee, which was launched in November 2011, reduced the existing 11 specialized committees to six. In addition, one of the Strategic Committee members also served as the Chairman of the Strategic Subcommittee to strengthen the linkage between the Strategic Committee and the Working Group. Moreover, the committee operated centring on the Strategic Committee, the Working Group concentrated on supporting the Strategic Committee's activities and coordinating the agenda, and the Strategic Committee members participated in the Professional Committee to secure the linkage between the two (National Informatization Strategy Committee, 2012).

The National Informatization Strategy Committee, run by the Lee Myung-bak administration, was a presidential organization but did not receive a positive evaluation. The reason can be summarized as follows (Chung, 2015). First, it did not have permanence in policy. In other words, the Lee Myung-bak administration launched its slogan "The Lost 10 Years" and attempted to cut off the past. The biggest highlight of this process was the former government's e-government. Therefore, in the early days of the Lee Myung-bak administration, the use of the term e-government was banned and replaced by the term of national informatization. Later, when South Korea reached the number-one position in the UN's e-Government Survey, it became possible to use the term e-government again.

The second reason for the failure was the president's lack of leadership in ICT policy. President Lee Myung-bak thought that national informatization projects went through an invisible process, which he regarded as utterly wasteful. Therefore, there were many negative perceptions about informatization in the early days of the government, and since then green IT was promoted under the

slogan of "low-carbon green growth", but informatization and e-government were not promoted as part of the presidential agenda.

Therefore, the National Informatization Strategy Committee, which was composed directly under the president, had the limitation that it could not exercise strong control over each department's informatization projects due to the president's indifference. In particular, in the case of e-government, it was composed of one specialized committee under the National Informatization Strategy Committee but it did not achieve any results except in the smart work and mobile e-government sectors.

As a result, the Lee Myung-bak administration missed the opportunity to promote administrative reform using information technology through e-government and downgraded the e-government into an information system construction project rather than a government innovation project. As such, the failure of e-government will be recorded as a representative case of policy failure, resulting from the painstaking idea of erasing the traces of the previous government following the regime change. At the same time, he left the lesson that establishing a presidential committee does not necessarily promise success.

### *The digital government project period from 2013 to 2017: the Park Geun-hye administration; the diversification of ICT governance*

In late 2012, President Park Geun-hye said, "There are so many committees under the government that our country is called the 'Committee Republic' ". In January 2013, the Presidential Transition Committee announced a pledge to "repeal all of the 21 Presidential Commissions except the Regional Development Committee". However, as of June 2016, there were 549 government committees, up from 505 committees at the end of the Lee Myung-bak administration (Chung, 2017).

While the Lee Myung-bak administration organized and operated one National Informatization Strategy Committee, there were too many ICT-related government committees in the Park Geun-hye administration. These ICT-related committees operated independently of each other, creating a range of overlap. ICT committees had legal differences on the basis of their installation. The Public Data Strategy Committee and the Information and Communication Strategy Committee, which were established first, were based in Acts, the Government 3.0 Promotion Committee was based on presidential decree and the e-Government Promotion Committee was based on the Ministry of Government Administration and Home Affairs.

Looking at the ministries that act as secretaries, all three committees except for the "Information and Communication Strategy Committee" had the Ministry of Government Administration and Home Affairs acting as their secretary. Therefore, it was understood that the major ministries for the ICT policy of South Korea at this time were the Ministry of Science, ICT and Future Planning, and the Ministry of Public Administration and Home Affairs. In particular, the Public Data Strategy Committee, the Government 3.0 Promotion Committee and the e-Government Promotion Committee, in which the Ministry of Government

Affairs and Home Affairs acted as secretaries, had a structure of overlapping functions.

In particular, the e-Government Promotion Committee was closely related to these committees in that e-government is the actual production base of public data intended for use by the Public Data Strategy Committee and the Government 3.0 Promotion Committee. Thus, the four committees duplicated their functions and roles in all aspects of public data openness, use and e-government.

As such, the Park Geun-hye administration formed and operated too many government committees related to digital innovation, causing chaos. Rather than performing coordination functions such as policy coordination or mutual cooperation among government ministries, these ICT-related committees did not exercise practical authority in the policy making process but merely performed deliberation and voting functions.

### *The digital government project period from 2017 to present: the Moon Jae-in administration; the necessity of reorganization of ICT governance*

With the launch of the Moon Jae-in administration in May 2017, nothing has changed regarding the e-government promotion system. The Moon Jae-in administration did not alter the e-government system and inherited the so-called Park Geun-hye administration's organizational structure. However, various reforms were made in the ICT governance field. First, the Ministry of Science, ICT and Future Planning was reorganized as the Ministry of Science and ICT and the Small and Medium Business Administration was promoted as the Small and Medium Venture Business Department. Second, the existing Government 3.0 Committee was abolished. Third, the Fourth Industrial Revolution Committee was established under the president.

As such, the Fourth Industrial Revolution, rather than the e-government or digital government, is promoted as the presidential agenda in the Moon Jae-in administration. The problem raised in this regard is that the government has responded to populism to cope with the arrival of the intelligent information society, indiscriminately introducing and exploiting the word "revolution" in the public sector.

In August 2017, the Moon Jae-in administration reviewed and decided on the Regulations on the Establishment and Operation of the Fourth Industrial Revolution Committee to form the Fourth Industrial Revolution Committee. Therefore, it was problematic in that it started as a temporary organization. The committee, which had been in operation for a period of five years, has been criticized because it is not sustainable (Chung, 2017). Therefore, work is currently underway to legislate the Fourth Industrial Revolution Committee.

However, the most important issue to be addressed here is the status and legislation of the e-Government Promotion Committee. Since the Moon Jae-in administration did not improve the e-government promotion system, the e-Government Promotion Committee of the Ministry of Public Administration

and Security was established based on the instructions of the Minister of Public Administration and Security and not based on e-government law. The current e-Government Promotion Committee was formed on April 1, 2016, based on the Regulations on the Establishment and Operation of the e-Government Promotion Committee on March 30, 2016.

In short, the e-Government Promotion Committee has no practical authority over South Korea's digital innovation policy. Therefore, the e-Government Promotion Committee should be written into the e-Government Act as soon as possible to solidify its foundation and strengthen its status. In conclusion, the Moon Jae-in administration's policy of government innovation using information technology or the transition to digital government through digital transformation is not the president's agenda and it is not certain that it will be successful.

## The excellence of the NIA: securing excellent professional organization expertise

One of the important factors that have made South Korea a global leader in the field of digital government today is its high level of expertise. In order for a country to implement digital government, it must first have a high level of technical expertise. South Korea has accumulated a variety of technical experiences in the past by establishing high-speed information and communication infrastructure and also has advantages in the use of information technology. More important than this technical aspect, however, is the need to have good professional staff to further develop or utilize the technology. In South Korea, the National Information Society Agency (NIA) has performed the task of e-government technical support for the past 30 years. The description of the NIA, which plays a key role in South Korea's digital government policy, is as follows.

### *Agency introduction*

Since its establishment in 1987, the NIA sowed the first seeds in an information-barren land starting with the construction of the National Basic Systems (NBIs) and has for the past 32 years continued in its efforts to solidify the foundation upon which South Korea could transform itself into the nation strong in knowledge and information it has become today. As the agency responsible for the overall implementation and support of the information of the nation and society, the NIA, building upon the knowledge and expertise accumulated over the years, will continue to spare no efforts in bringing new opportunities and possibilities offered by information technology to the nation and society by providing optimal methodologies and solutions to national agencies, local autonomies and public enterprises. In a world of newly emerging knowledge and information paradigms, the NIA continues to be the definitive expert agency charged with a central role in the information of the national society.

***Vision and mission***

vision: to become the world's best ICT-specialized institution
mission: to solve social issues and lead the future of the nation through informatization

The NIA is a statutory agency founded by Article 10 of the Framework Act on Informatization Promotion for the purpose of promoting informatization and to support the development of related policies for national agencies and local autonomies. As the core agency of national informatization entrusted by government and the people with providing policies and technical expertise the NIA is leading the way in the construction of u-Korea (Ubiquitous Korea) towards a first-class nation in information and communication through the following targets.

- research on the national informatization policy, and build an ICT investment management system
- plan e-government policies and provide world class e-government services
- promote the disclosure of large volumes of public data which are closely related to our daily lives, and use public data to foster a supportive environment for start-ups and overseas market expansion
- build ICT capacity of information-disadvantaged groups, and prevent and treat internet and smartphone addiction
- create new markets by applying promising ICT pilot programmes to public sectors
- lead the way towards future intelligent society through ICT strategy consulting and the enhancement of future ICT infrastructure
- strengthen global ICT cooperation, support the expansion of global e-government overseas markets, and operate informatization education programmes for public officials of the partner countries and a global consultant training programme

***History***

- 2017: thirtieth anniversary of the NIA
- 2016: launched Public Cloud Support Centre
- 2013: launched Big Data Strategy Centre, launched Open Data Centre
- 2010: launched e-Government Standard Framework Centre
- 2009: launched as National Information Society Agency; merged with (former) Korea Agency for Digital Opportunity and Promotion
- 2007: designated as u-city (Ubiquitous City) technical support centre
- 2006: supported establishment of u-Korea Master Plan
- 2005: designated as exclusive organization for constructing administrative information databases for enhanced digital competitiveness of South Korea; supported establishment of IT839 and u-Korea strategies

- 2004: designated as exclusive organization for e-government projects; designated as exclusive organization for USN construction
- 2002: constructed backup centre for National Backbone Information System
- 2001: launched e-approval certification service in public sector; designated as exclusive organization supporting e-government technology
- 2000: opened high-speed national information network
- 1998: established as Y2K Support Centre
- 1996: designated as organization supporting specialized technologies for national informatization
- 1994: designated as exclusive organization for constructing Korea Information Infrastructure (KII)
- 1989: designated as the First National Computer Network plan period
- 1987: established as the National Computerization Agency (NCA)

***Main business***

The main business of the NIA can be summarized as follows (NIA, 2019).

- future strategies
  formulate national strategies to open the way towards future intelligent society
  - establishment of data-based future strategy
  - development of ICT-based creative economy policies
  - establishment of ICT investment guidance and management system
- e-government
  good e-government based on knowledge and creativity
  - planning e-government policies
  - providing world class e-government services
- ICT convergence
  shaping economic and social innovations through ICT convergence
  - planning and implementing ICMBS convergence policies and projects
  - promoting the national economy through ICT convergence in the public sectors
  - building infrastructure for next-generation fixed mobile convergence (FMC)
- digital culture
  digital culture for inclusive growth
  - building ICT capacity of information-disadvantaged groups
  - building a convenient digital life environment
  - preventing and treating internet and smartphone addiction
- Open Data and innovation
  support for sustainable government innovation based on ICT
  - promotion of public data utilization
  - support of data-based government innovation

- ICT platform and services
  lead the way towards future intelligent society through cutting-edge ICT support
  - intelligent information technology consulting
  - realization of smart platforms
  - enhancement of future ICT infrastructure
  - technical support for vitalization of big data
- big data
  develop and build competitiveness in data-driven Fourth Industrial Revolution
  - application of big data in industries
  - enhancement of big data competitiveness
- global cooperation
  foster South Korea-friendly global market
  - strengthening of global ICT cooperation
  - fostering of supportive environment for global market expansion
  - expansion of global ICT and e-government education

## Case study: ICT governance for e-government and digital government – the US versus Denmark

Since ICT governance is a very important factor for the success of e-government and digital government, related discussions have been actively conducted theoretically and empirically. In addition, many countries have been continuously reforming ICT governance to cope with the rapid development of intelligent information technology. When organizing key functions related to e-government into policy making and coordination, ICT governance can be classified into two types: directly under the president (prime minister) and central departments (IT and science and technology, financial budgeting and administrative services). Here, the presidential system refers to political power and interdepartmental integration while the central departmental system refers to decentralization and interdepartmental autonomy. Based on this understanding, ICT governance cases in the US and Denmark are as follows.

The United States enacted the e-Government Act of 2002 and established the Office of e-Government at the presidential Office of Management and Budget (OMB). Thus, it is a representative example of a president-oriented country. These presidential (prime minister)-direct mechanisms have been adopted by the United Kingdom, Japan and Ireland, which focus on upgrading e-government to a level of governmental integration and linkage. These countries are among the most advanced in the world in terms of e-government, with a focus on coordinating and collaborating across ministries through the leadership of political leaders. The United States and the United Kingdom, in particular, are managing performance in close links with their financial budgeting functions.

In the United States, in terms of leadership and initiatives, the OMB is considered to be successful in leading and coordinating informatization policy. Since 2002, the Office of Electronic Government (OEG) has exercised strong coordination. In August 2014, the United States benchmarked the UK's Government Digital Service (GDS) to establish the US Digital Service (USDS) within the OEG. The USDS is in charge of improving the government's core public services and promoted digital government with the aim of improving the services simply, effectively and efficiently.

The Trump government recently set up the American Technology Council in the White House and presented a vision for ICT throughout the government, in particular highlighting cybersecurity and modernizing its own ICT. An important policy implication of US digital government governance is budget control and coordination in the e-government implementation policy process.

In contrast, Denmark is a country in which ministries are responsible for digital government projects. Countries that are highly regarded for e-government, such as Sweden, Australia, Singapore and the Netherlands, are choosing this technology department model. In the case of South Korea, it is a ministries model, but shows a unique structure that has been operated by a government-wide committee.

In 2011, Denmark established the Agency for Digitization to promote digital government and manage large-scale IT projects under the Ministry of Finance. The organization was formed by merging the National IT Agency and the Government Administration to promote the digitalization of the entire society. The organization currently operates online services including digital signatures (NemID), the Danish National Portal (borger.dk) and welfare public bank accounts (NemKonto) and is implementing "Digital Strategy 2016–2020".

In addition, the Inter-Ministerial Project Office has been installed and operates as a separate secretariat organization to enhance the expertise of ICT project management in various ministries. It also operates the Danish Council for ICT Projects for evaluation and management and a consulting secretariat for specialization in operations.

As of 2010, many countries are integrating e-government and national informatization or a digital government promotion system. This may be because e-government is now included in a nationwide informatization strategy rather than a single ministry's administrative informatization project. In particular, the emergence of smartphones and the rapid convergence of information technology make it difficult to establish and implement policies at the single-ministry level as in the past in the field of information and communication. The involvement and cooperation of various ministries have become important as informatization is absorbed and converged in all areas of society. Therefore, in the e-government aspect, policy making at the national level is emphasized rather than the development of ministry-specific services. Therefore, ICT governance, which is the core of cooperation and coordination among ministries, is emphasized.

## Lessons learned: how to secure the sustainability of ICT governance regardless of administration change

As we have seen earlier, a powerful government-wide control tower is essential to drive digital government. In many countries, however, ICT governance for digital transformation is constantly changing. In this regard, should digital government policy be handled by the technology ministry or the innovation department? Conflicts between ministries also appear in relation to the initiative to drive digital government. Therefore, in many countries, new organizations are created and removed every time the administrations change. South Korea is no exception.

In this regard, a way to ensure the sustainability of ICT governance is to construct the promotion system as a statutory organization. The answer can be found in the US e-government law. The United States enacted the e-Government Act in 2002 and created the Office of Electronic Government (OEG) within the OMB. Since then, it has been strongly pushing for e-government by utilizing the budget authority of the OMB.

South Korea also enacted its own e-Government Act, but since it did not stipulate the implementation system in the bill, it is repeatedly performing a new implementation system every time the administration is changed. In South Korea, there has long been a conflict regarding a dedicated organization of e-government between the ministries in charge of information and communication technology and the ministries in charge of government innovation. Of course, e-government has been led by ministries in charge of government innovation rather than ICT ministries.

However, the issue of ICT governance is again emerging in the arrival of the Fourth Industrial Revolution and the realization of digital government through digital transformation. Therefore, the most realistic alternative would be to form a higher-level government innovation committee, institutionalize it and legislate it, including ministries in charge of ICT and government innovation.

To this end, a government-wide committee must be formed, placed as a committee under the president or prime minister, and given political neutrality to create an environment in which digital government can be promoted regardless of administrative change. In this process, the president or prime minister should not be the chairman of the committee but should appoint the chairman as the national chief information officer (CIO) and delegate power to the chairman to empower the committee.

## Notes

1 Every year from 2008 to 2009, South Korea's e-government budget was significantly reduced – from $170 million in 2007 to $85 million.
2 This is based on the author's subjective perception of the past 20 years, along with the presidents, as they proceeded with the conference on information policy initiatives involving digital government projects.

3 In fact, President Roh Moo-hyun had been fully aware of the fifth phase of e-government development in 2003–2005. These five steps were later downgraded to four levels, but he was very aware that South Korea had to move into phase four in 2003 and into phase five in 2007, five years later, to implement a unified government. In particular, when information sharing between power agencies is not properly carried out, the president has also attempted to coordinate with the ministers directly.

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# 10 Technical and institutional success factors

## Introduction

Leadership and ICT governance, as discussed in the previous chapter, were success factors from a political point of view. In this chapter, I analyze success factors from a technical and institutional perspective. South Korea was a backward country in the field of information and communications until the 1980s. However, since the mid-1990s, in response to the global information superhighway promotion policy, South Korea also began to build high-speed information communication infrastructure. As a result, it has become the country with the world's fastest telecommunications infrastructure. In order to establish the national information and communication infrastructure, it was necessary to support the budget and legal system. Interestingly, South Korea was the first country in the world to enact e-government laws, and one of the most unique factors in the success of digital government in South Korea has been the resident registration number system. The technical and institutional success factors can be summarized as follows.

- the completion of high-speed information communication infrastructure and the advancement of the information communication network
- budget support: the Information and Communication Promotion Fund
- the resident registration number and resident registration system
- the establishment and contents of the e-Government Act

## The completion of high-speed information communication infrastructure and the advancement of the information communication network

South Korea launched the world's first fully fledged 5G mobile network on April 4, 2019. As a result, South Korea has proved to be a world leader in information and communications. The development of South Korea's information and communication sector was not done overnight. The development of information and communication in South Korea can be divided into three stages, as follows. The South Korean government has constantly enforced strategic policies for network

construction – through the High-Speed Network Strategy (1995–2005), the Broadband Network Strategy (2004–2010) and the Broadband Convergence Network Strategy (2009–2014).[1]

### *The High-Speed Network Strategy (1995–2005): building an information superhighway*

The project to build an information superhighway started in the Kim Young-sam administration (MOIS, 2017, 30).

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

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

The first stage (1995–1997) of the KII rolled out a fibre optic backbone network for the information superhighway, resulting in the deployment of a high-speed network in 80 locations nationwide with a total investment of 175.5 billion KRW. Once completed, this first stage provided broadband services to 15,000 public institutions, including government ministries, local governments and educational institutions, at a 40–50 per cent cheaper rate than those of private providers. The second stage (1998–2002) of the project focused on expanding coverage and enhancing network service by making a transition from an ATM-based backbone network to a router-based one as the core network. In the third stage (2003–2005), a converged broadband multimedia service transmission network was completed, providing transmission speed of tens of gigabytes to several terabytes per second, five years ahead of the planned schedule. From 1996 to 2005, the KII project expanded the network subscribers 19-fold and increased network speed remarkably. This served as the basic infrastructure for South Korea's current e-government.

### *The Broadband Network Strategy (2004–2007)*

Subsequently, the Broadband Network Strategy implemented during the Roh Moo-hyun administration was summarized as follows according to the South Korean government's press release (KCC, 2009).

In 2004, the South Korean government announced details of a three-stage Broadband Convergence Network (BcN) initiative to be rolled out between 2004 and 2010. BcN was an integrated next-generation network that provided at anytime and anywhere broadband multimedia services that converged telecommunications, broadcasting and the internet. The initiative set out plans for the provision of 50–100 mbps broadband services for fixed subscribers. This broadband infrastructure project began in 2004 as a consortium that included the government and private-sector firms. This infrastructure was launched as a three-phase project. The first phase of the BcN extended from 2004 through 2005, the second phase extended from 2006 through 2007, and the third phase extended from 2008 through 2010.

South Korea was aiming to establish the world's best BcN subscriber network that could provide broadband multimedia services to 100 million households using wired services and 100 million wireless service users by 2010, and to produce BcN-related communications and broadcasting devices worth 67 trillion KRW and achieve an export value of $20.1 billion.

Also, through the successful establishment of BcN, the government intended to provide a foundation for participatory democracy through the provision of diverse forms of electronic governance services such as M-Gov and T-Gov, and governmental surveillance; and provide ubiquitous service environments such as u-learning, u-healthcare and u-work environments to provide all South Koreans with an environment where they can enjoy high-quality education, welfare and employment conveniently at any time and any place. Therefore, by quickly establishing BcN across the nation, it was possible to provide a variety of electronic civil service delivery to the South Korean people, which has laid the foundation for the implementation of the digital government of South Korea.

### *Ultra Broadband Convergence Network Strategy (2009–2013)*

At the end of January 2009, the South Korean government announced a "medium-to long-term plan to develop the communications network" in order to build an Ultra Broadband Convergence Network (UBcN) to meet future demand for communications service that is experienced, converged, intelligent and private. This UBcN was an ALL-IP based network of an average speed of 10 mbps for wireless and 1 gbps for wired, which was ten times faster than the previous network.

The South Korean government developed and demonstrated broadband-based services like e-health, e-learning, e-government, and u-city; e-health services were provided to remote island regions of South Korea. In this way, broadband was used as a method to narrow the gap between rich and poor and among classes and regions. This is expected to become an opportunity to come up with a smooth cooperation system between the government and the private sector for the successful pursuit of UBcN. Since breaking through the 10 million subscriber mark in 2002, subscriber growth has steadily increased, reaching over

20 million fixed broadband subscribers by 2016. The widespread adoption of the internet in South Korea coupled with the continued pace of development has resulted in an exciting digital economy.

### *The advancement of convergence infrastructure (2014–present)*

According to the latest 2018 National Informatization White Paper published in South Korea, the status of Broadband Convergence Network is as follows (NIA, 2019, 30–34).

> Based on the successful deployment of the Broadband Convergence Network, the South Korean government launched the Giga Internet infrastructure in 2014. Actually, South Korea has been preparing Giga Internet for a long time. In 2009, the South Korean government set up "Giga Internet service base construction" as a national task for the people to use broadband communication services through the construction of next-generation network infrastructure and embarked on building a Giga Internet network by including it in the "Broadcasting Network Mid-to Long Term Development Plan".
>
> The government has steadily promoted the policy of establishing a national strategic network including K-ICT network development strategy (2016–2020). As a result, the domestic internet environment has made remarkable progress. Detailed implementation strategies are being promoted according to the internet development stage based on the network infrastructure development strategy at the national level.
>
> Also in 2017, the government planned to work together with the private sector to expand joint construction of the Giga Internet in small and mid-sized cities with low Giga Internet coverage. In the initial stage of Giga Internet commercialization in South Korea, there was a lack of application services that required an internet speed as fast as 1 gbps. Therefore, the government decided to encourage the Giga Internet foundation building and application service development all at the same time since the early stages.
>
> In February 2018 at the Pyeongchang Winter Olympics, the world's first 5G pilot service was launched, attracting worldwide attention. In addition, in April 2019, South Korea launched the world's first 5G mobile network commercialization service and has continued to prove itself as a global leader in information and communications infrastructure.

## Budget support: the information and communication promotion fund

In the implementation of national policies, the budget is generally known as the most powerful control measure. This also applies to the promotion of digital government policies. The large amount of budgetary support for information policy was an important factor for South Korea to become a global leader in the field of digital government. Among these budgets in the information policy

sector, independent of the replacement of the administration, funding is a part of the administration's continuing commitment without being subject to congressional control. South Korea has been supporting the digital government policy by establishing information-related funds for the past 20 years. The introduction and utilization of the Information and Communication Promotion Fund (ICT Promotion Fund) has a long history. The ICT Promotion Fund can be analyzed through broad division into the following categories.

### *ICT Promotion Fund (1993–1995)*

The South Korean government initiated the ICT Promotion Fund in January 1993 to foster the information industry, a national strategic industry. However, the amount of the initial composition was low, at only about 100 billion KRW. With this fund, the government supported the development of information and communication technologies of companies and the purchase of domestic host computers. Specifically, it provided support for national research and development projects such as digital mobile communications, purchase of domestic host computers and purchase of information and communication equipment. The achievements of the projects supported by the ICT Promotion Fund in the early stage have made great advances in the development of mobile communication, memory semiconductors and digital electronic switching system technology as part of the research and development of information and communication.

### *Informatization Promotion Fund (1996–2004)*

In 1994, the Ministry of Information and Communications was newly established, and in August 1995, the Informatization Promotion Fund was expanded and reorganized with the enactment of the Informatization Promotion Act. It was divided into a general account for informatization promotion and an R&D account for ICT industry that succeeded the ICT Promotion Fund. The fund was established with the aim of enhancing the quality of life of the people and development of the national economy by effectively promoting informatization, establishing the infrastructure of the information and communication industry, realizing the upgrading of the information communication infrastructure and supporting information and communication research and development. During this period, nearly 1 trillion KRW was raised annually. The increase in the amount of funds raised was due to the implementation of a high-speed information communication infrastructure project.[2]

In this way, South Korea established a high-speed information network (155 mbps to 5 gbps) where anyone can access the high-speed internet anywhere through the bold and resilient input of the ICT Promotion Fund, and provided the network base of the knowledge information society. In addition, the ICT Promotion Fund was used in e-government projects promoted in the early 2000s.[3]

The ICT Promotion Fund also supported the development of the ICT industry and assisted the emergence of ICT as the core growth industry of the South

Korean economy. The fund also created an environment including Software (S/W) support centres and investment unions in which IT venture companies can actively start businesses and grow. In the course of this process, problems were raised in the formulation and use of the ICT Promotion Fund. Since 2002, the South Korean government has made changes so that the use of funds, as in the case of budgeting, go through the deliberation and resolution of the National Assembly.

### *ICT Promotion Fund (2005-Present)*

In December 2004, the South Korean government amended the Basic Informatization Promotion Act and succeeded the R&D account of the Information Promotion Fund to establish the ICT Promotion Fund. Therefore, the existing general account for informatization promotion was abolished. The resources of the ICT Promotion Fund are as follows.

- government contributions or loans
- telecommunications carrier research and development charges
- frequency allocation by radio wave method
- proceeds from fund management
- borrowings and other income

The use of the ICT Promotion Fund is as follows.

- R&D on information and communication
- development, establishment and dissemination of information and communication standards
- training of information and communication personnel
- establishment of the infrastructure of the information and communication industry
- frequency allocation fees returns in accordance with the Radio Law

The results of ICT development through the ICT Promotion Fund can be summarized as follows.

- industrial source technology development
- development of information and communication growth technology
- standardization
- human resource training
- loans and investments

As of 2019, the ICT Promotion Fund is managed by the Ministry of Science and ICT (MSIT), newly established along with the Moon Jae-in administration. The National IT Industry Promotion Agency is responsible for fund spending. The management and operating cost for the last two or three years has been about

$1 billion each year. As such, the ICT Promotion Fund has contributed greatly to South Korea becoming a global leader in digital government. In particular, in the past, it supported the broadband information network and Broadband Network Strategy and contributed greatly to the development of the ICT industry as a national growth engine.

## The resident registration number and resident registration system

South Korea was able to become the leading country in the field of digital government it is today because of the resident registration number. South Korea has been operating the resident registration number for the past 50 years and has established a resident registration system to utilize it. South Korea connects the personal information of all fields including education, medical, tax and administration by using the resident registration number given to all residents. Therefore, in recent years, the abuse of the resident registration number has raised nationwide interest in the privacy violation issue. Recently, the South Korean government has begun to gradually reduce the use of the resident registration number and is preparing alternative measures (Yoon, 2017). The details are summarized as follows.

### *Origin of the resident registration number*

The resident registration number in South Korea is based on the Resident Registration Act, enacted in 1962 and in operation until now. The purpose of this Act was to promote convenience in the lives of residents and to properly process administrative affairs by clearly ascertaining the situation of residents and the movement of the population.

There are two opposing views on the Resident Registration Act. On one hand, it is claimed that the purpose of resident registration is to provide effective administrative services, including resident welfare. On the other hand, it is claimed that the purpose is to control residents. This is because the resident registration number has been recklessly abused as a means of identity verification in cyberspace (i.e., on the internet).

In August 1975, the South Korean government revised related laws to create a resident registration number based on a 13-digit system. The government granted resident registration numbers to all citizens at the time of birth registration, which allowed them to identify their date of birth, sex and birth area.

### *Structure of the resident registration number*

The resident registration number given at birth to all South Koreans is a 13-digit number structured XXXXXX-XXXXXXX. Looking at the personal information that a resident registration number contains, the first six digits represent date of birth (YYMMDD). The next digits signify birth year and gender. For example, a

man born in the 1900s is given 1, a woman in the 1900s is given 2, a man born in the 2000s is given 3 and a woman born in the 2000s is given 4.

The next four digits signify the issuer agency of the initial resident registration number. In short, this is the birth region's area code. The subequent digit is the order of declaration – in other words, it records how many people in the same area were reported on the day of declaration. The last digit is an error correction check digit that proves whether the resident registration number is correct.

### *The pros and cons of the resident registration number system*

The South Korean resident registration number is a personal identification number widely used not only in public institutions but also in the private sector. The South Korean government built a comprehensive land tax system or a real estate management system using resident registration numbers. In addition, the real-name financial system was implemented to lay the foundation for the introduction of comprehensive income tax. Also, all private-sector businesses such as department stores and gas stations conduct customer management using resident registration numbers. Recently, personal information held by corporations has been leaked extensively, causing serious social problems.

As such, resident registration numbers are deeply embedded in the lives of South Koreans, but the claim that they infringe upon privacy has become increasingly widespread since the introduction of the e-resident card in the mid-1990s. Therefore, in order to prevent privacy infringement and to prevent the harm caused by information concentration, it is suggested that restrictions should be imposed on the use of the resident registration number system, such as restriction of use agencies or special permission for searching personal information through resident registration numbers. Furthermore, even if the identification of an individual identification number is allowed by an administrative need, it has been proposed to change the information about the individual into a meaningless serial number that can't be used directly to extract personal information.

### *The process of institutional improvement of the South Korean government*

As such, resident registration numbers are at the centre of information society privacy discussions in South Korea. Therefore, the South Korean government has implemented measures to improve the use of resident registration numbers as follows.

- phase 1: ban on private-sector use

  It is true that the privacy of the resident registration number in South Korea is likely to be infringed upon because age, sex and area of birth are displayed. The South Korean government prohibited the collection and use of resident registration numbers online from August 2013.

- phase 2: limited public-sector use

  From February 2015, the South Korean government had prohibited the collection of resident registration numbers if it is not based on statute (law or decree).
- phase 3: enhancement of e-government (administrative information sharing)

  Considering the development trend of e-government in South Korea, it is expected that the provision of an integrated electronic civil service will be realized by around 2020. Therefore, in the case of the public sector, by the year 2020, identification of a person through their resident registration number will no longer be required.
- phase 4: change of resident registration number

  For the protection of personal information, the current resident registration number, which has potential for privacy violation, should be replaced by another number.[4]

  However, the South Korean government is seeking improvements in the existing resident registration system. From May 2017, the government has allowed residents to change their resident registration number after they have passed a resident registration number review committee decision for cases of actual or potential physical or property damage due to the leakage of a resident registration number. This is the first time that change to a resident registration number has been possible since its introduction in 1975.
- utilization of a substitute ID

  For a long time, the South Korean government has promoted ways to allow users to join internet sites through alternative ID such as a virtual resident registration number to protect personal information. In October 2006, the government announced plans to use the internet through alternative means such as a virtual resident registration number in order to solve problems such as the spread of personal resident registration numbers and names on the internet. Specifically, the "Guidelines for the Replacement of the Resident's Number on the Internet" were confirmed and the name of the substitute internet ID, which was integrated into the "i-PIN: Internet Personal Identification Number".

### *The process of building a resident registration system in South Korea*

In South Korea, the resident registration system (RRS) collects a citizen's biometric data, such as their facial characteristics and fingerprints, to provide a wide range of public services. Data are saved in the RRS with resident registration numbers (RRNs) assigned to each citizen for identification purposes (Yoon, 2015). The South Korean government has been building resident registration systems for a long time, centring on resident registration numbers. The process of building the RRS was as follows (MOIS, 2017, 31–32).

> The computerization of resident registration began in late 1977 with the pilot project for administrative computerization in North Chungcheong Province.

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

This information was then stored in the servers installed in each province and city government office, making the data retrievable by the Ministry of Internal Affairs. The government was then able to use this information as a basis for establishing statistics and relevant policies.

By 1989, resident registration data entry throughout the country had been completed, and in December 1990 the national online registration service was officially launched. In 1991, the Resident Registration Act was amended to provide legal grounds for the computerization of resident data. As a result, administrative tasks such as change of address and issuance of certified copies of resident registration could be processed electronically. When resident registration information was renewed nationwide in 2000, relevant data including photo data were computerized.

In particular, in 1996, when the government proposed introducing a system for the distribution of electronic IC resident cards using integrated resident information, issues were raised concerning leakage of the information and illicit use of the cards. In the end, strong opposition from civil groups and the election of a president who opposed the idea resulted in the suspension of the project in 1998. Around this same time, opposition against shared use of resident registration information grew even stronger within the government itself.

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

In 2003, the Ministry of Government Administration and Home Affairs improved upon the preexisting system by building a new web-based resident registration system for cities, counties and boroughs, enabling all the government administration offices in the country to browse resident registration data online. These improvements have completely eliminated the need to store and manage paper registers manually.

In March 2006, the government established a verification system to check the authenticity of the resident identification card information. Several years

later, in July 2013, a signature verification system and an electronic signature verification system were made available to replace individual seal certification services. The government's identification card verification services were designed to prevent the illegal use of resident cards and driver's licences by persons other than the cardholder along with prevention of the opening of fake bank accounts and cloned phones.

In December 2015, the government encrypted resident registration numbers to ensure a secure management system with tight protection of personal information. The resident registration system provided 33 government administrative agencies, including the National Tax Service, National Police Agency and National Health Insurance, with resident registration data for the purpose of eliminating the need for procuring the paper certificate of resident registration by sharing its information among the government agencies authorized to share the data.

As of 2019, the issue of identity verification is becoming a social issue in cyberspace as electronic service delivery processing and electronic commerce based on digital government are expanding. In particular, the resident registration number was created for use in the public sector, but is now widely used in the private sector as well and has caused controversies on privacy issues. Accordingly, there is increasing focus on minimizing the use of the resident registration system to the public sector only and in sharing administrative information.

## The establishment and contents of the e-government act

The e-Government Act has had great significance in the development of digital government in South Korea, which enacted this, the world's first e-government law, in 2001, pursuing democracy as well as increasing the productivity and efficiency of administration and electronic business processes. The enacting process and main contents of the e-Government Act are as follows.

### *Enactment process*

The Ministry of Government Administration and Home Affairs actively prepared for the enactment of the e-Government Act from the beginning of 2000. As a result, the enactment of e-government legislation was included in the detailed work plan for major works in 2000. In particular, the Ministry of Government Administration and Home Affairs attempted to enact a comprehensive statute for the twenty-first-century information environment. Accordingly, the contents to be included in the draft law included the establishment of an e-government promotion system, the reduction of paper documents, the revitalization of public information utilization and the protection of the public's right to know more.

In this process, on March 22, 2000, the Minister of Government Administration and Home Affairs reported to the president on the work of the Millennium

Report and reported the enactment of e-government law as a central task of the ministry.

In March 2000, the Ministry of Government Administration and Home Affairs obtained the authority to enact the e-Government Act in the Millennium Report from the president. Accordingly, the Ministry of Government Administration and Home Affairs commissioned external academia and professional organizations to provide services for e-government law, and based on these results prepared the e-Government Implementation bill in September. However, this law underwent many changes in the legislation process after it was submitted to the National Assembly and finally passed the National Assembly on February 28, 2001.

The Act has been in force since July 1, 2001 when the e-government act was passed at the National Assembly. Due to the weakness of e-government governance, amendments to the law are now being submitted to the National Assembly (Chung & Kim, 2019).

### *Main contents*

The e-Government Act of South Korea, which was the first e-government law established in the world, concerned not merely the introduction and utilization of electronic documents but also caused great changes in administration through the electronic civil service. Therefore, this section examines the contents of e-government law and changes in administrative behaviour from the viewpoint of the productivity, transparency and democratization of government administration processes.

As such, e-government is not merely aimed at reducing government operating costs (increasing government internal productivity), nor is it limited to achieving better government services at a lower cost or providing more convenience for people to receive services (external productivity increase from government). These are basic qualities and the Act has more a fundamental implementation purpose: to make sure that what is happening in the government is visible to the public in a convenient way (transparency enhancement). Also, there is a more important purpose of e-government realization to show the people's own will more effectively to the government and to enhance the people's influence on the government, that is, the power of the people as the owners of the government (democracy enhancement).

#### *Democratic aspects of administration*

The democratic aspects of administration can be roughly divided into the following three articles of the e-Government Act: Article 4 (principles of electronic government), Article 42 (prior consent of owners of information) and Article 43 (rights of owners of information to request access).

Now, as the use of information and communication is rapidly spreading in our society, the dysfunction of informatization such as hacking, infringement of

privacy by leakage of personal information and computer crime is expanding. In addition, South Korea has experience of postponing the adoption policy of e-resident cards due to confronting arguments, namely, the pursuit of efficiency in administration and the possibility of privacy invasion. Therefore, the South Korean government enacted the e-government law and prioritized citizen benefits and the protection of the rights of the people.

This policy has been formulated in Article 4 as e-government principles centred on the citizens' convenience. Furthermore, in order to prepare for not only the benefit of citizens but also the dysfunctions, it also specified Article 42 (prior consent of owners of information) and Article 43 (rights of owners of information to request access).

When the law was enacted in South Korea in 2001, most administrative services were only available to civil servants by visiting the relevant government agencies. At this time, however, many countries, including Australia, Singapore and Hong Kong, not only enabled the paying of taxes but also the reporting of births, marriages and deaths through the internet. Especially in Singapore, except for very special cases, civil applicants have in fact been prohibited from coming to government agencies and meeting with personnel to handle civil affairs such as permits.

In response to this trend, the South Korean government has also stipulated the processing of non-stop civil service and has established the electronic civil service counter on the internet (Article 9) as a concrete means of implementation, through Article 9(2), concerning the provision of daily life information through an integrated electronic civil petition window. Particularly, in order to provide electronic civil administration services, identification of the applicant is essential. Therefore, Article 10 (verification of identities of civil petitioners, etc.) stipulates such identification.

The e-Government Act also clearly stipulates the principle that the responsibility of verification lies with the administrative departments. More specifically, administrative departments should electronically confirm the required documents.

Article 8 (electronic verification, etc. of required documentation) made a change to this. In the past, citizens had to visit various ministries for a single task. From the standpoint of the public, all administrative institutions and agencies are institutions belonging to an organization called the government. However, in order to receive administrative services from one institution, the citizens had to submit the necessary documents which were issued through visits to the other government agencies.

At that time, in order to apply for a passport, six applications had to be made and submitted to another institution. Also, if you sold your home, you had to visit three different agencies to report it. In order to obtain a copy of the register, you had to visit the registry office. After that, you had to go to the local district ward office and access the land register. The local district ward office had to be visited twice for a citizen to be issued with a house ledger. And with all these documents, the citizen had to go to the tax office directly to complete the transfer of property.

As such, it was a reality that government agencies that hold information of citizens, who are customers, were imposing a burden of proof on civilian people because they did not share information. Therefore, the law created an administrative information sharing process through the electronic verification of documents.

*Administrative process transparency aspects*

In the e-Government Act, the transparency aspect of administration can be roughly divided into electronic processing (Article 7, application, etc. for electronic processing of civil petitions) and electronic disclosure of administrative information (Article 12).

So far, various laws and regulations related to government affairs have generally adhered to the conventional method regarding processing methods. Of course, even in 2001, electronic processing methods were prescribed in some tasks such as government procurement and document management. However, the traditional treatment method and the electronic method were mixed or they were prescribed in the subordinate statute and non-existent in the upper statute. Therefore, the principle of electronic processing for major civil services by administrative agencies is now stipulated by the e-Government Act.

Based on the principle of electronic processing, electronic civil complaint handling methods can be introduced not only in the administrative internal affairs but also in the public administrative service. Specifically, the complainants can apply, report or submit electronic documents through information and communication means. In addition, when an administrative institution replies with an electronic document, the application, notification, submission or reply are made in accordance with the procedure set forth in the relevant laws and regulations. Therefore, the basis for the electronic civil administration service was established.

Under the e-Government Act, the South Korean government established a principle that allowed disclosure of information held on the internet. At that time, the information disclosure set out basic matters in the "Information Disclosure Act" and detailed regulations were enforced by various organizations. These information disclosure laws and subordinate decrees are also subject to disclosure of electronic information and the claim on information disclosure methods such as computer communication has been accepted.

However, the means of disclosing information was limited to viewing and copying. In order to disclose electronic information, the applicant was required to be identified by the civil servant. Therefore, electronic information disclosure has now been formulated as a concrete means of implementing information disclosure.

In the case of the United States, in 1996, the existing Freedom of Information Act was amended to provide an electronic information disclosure bill. According to the bill, all information held by the US government was required to be digitized by December 31, 1999. Subsequently, all information held by the US

government since January 1, 2000 was electronically released. The South Korean government stipulated the disclosure of electronic information in light of this situation when the law was enacted.

### *Productivity aspects of government administration*

In the e-Government Act, the productivity aspect of administration can be roughly divided into Article 25 on the utilization of electronic documents, Article 33 on the reduction of the use of paper documents and Article 36 on administrative information sharing.

With Article 25, the South Korean government revised the existing administrative regulations, and from September 1, 1999 it declared the electronic document as the basic document in business processing. At that time, however, electronic documents were not activated in actual administrative processing. Therefore, the government declared that many provisions in the office management regulations should be formulated by law and that the document work of public institutions should be based on the principle of electronic documents as in Article 26 (formation, effects, etc. of electronic documents, etc.), Article 27 (transmission and receipt of electronic documents) and Article 28 (timing of delivery or arrival of electronic documents).

Article 33 of the e-Government Act stipulated not only the use of electronic documents but also the necessity of minimizing and digitizing paper documents generated in the process of public institutional affairs. In other words, it obliged public institutions to reduce paper documents and required documents so that the legal effect of electronic documents can be actually guaranteed. In the case of the United States, the Paperwork Reduction Act of 1995 and the Government Paperwork Elimination Act of 1996 set out the federal government's obligations to reduce paperwork and to digitize paperwork through the support and use of information technology.

By 2001, when the law was enacted, South Korea was promoting administrative information but it did not activate the use of administrative information sharing. Such laws and regulations related to the administrative information sharing were stipulated in the former Act on Informatization Promotion, the Act on Networking and the Common Use of Administrative Information, and the Enforcement Regulations.

However, duplicate regulations on the same topics have caused confusion in the promotion of projects and the coordination between departments. Therefore, at the time of enactment of the e-Government Act, clarifications were made in the goals which were the duty of collective utilization of administrative information between public agencies and the prevention of duplication of production. Furthermore, the procedures for the sharing of administrative information, which included the administrative information centre and the application and approval method, were also improved, as in Article 37 (concerning the administrative information sharing centre).

*Change in administrative behaviour*

There is one aspect of the e-Government Act that sets it apart from other laws: it describes the duties of public officials. In other laws in South Korea, only the responsibility of the agencies are defined. However, the e-Government Act stipulates that it is the responsibility of civil servants to study ICT. Furthermore, the foundation for smart work and principles of business innovation were prepared.

Article 3 describes the duties of administrative agencies, etc. and public officials, etc. The role of related public officials is important for the successful implementation of e-government. In the past, in the case of the administrative informatization project, it was only done to reduce the manual work of government officials and to increase work computerization. If the related system is electronized and the electronic method dominates the internal affairs of the government as well as the external affairs with the public but the public officials do not deviate from the past manual practices, true e-government will not be realized.

Therefore, the reason why the duties of public officials are defined as a provision of e-government law can be understood as a comprehensive declaration that the realization of e-government is the responsibility of all public officials. Based on this article, the South Korean government conducts an information literacy test every year to improve the level of informatization of the public sector.

Article 32 concerns online teleworking and smart work (the electronic performance of work, etc.). In e-government, public officials are freed from the past constraints that obliged them to work at a certain place and time. Thus, it is possible to provide citizens with quality administrative services 24 hours a day, free from space and time, thereby maximizing the creativity of public officials. Nevertheless, according to the provisions of the related laws in the past, public officials were not allowed to leave the workplace, so there was a need to provide legal grounds for the teleworking of public officials.

The effect that can be expected from online teleworking is the reduction of administrative waste by reducing the time and cost of spatial movement. In addition, it will be possible to raise morale through improving the working environment of public officials, welfare for female civil servants and persons with disabilities. The expected long-term effects of online teleworking include overcoming the limits of desk-oriented administration and implementing an administrative service that approaches citizens by directly processing work in the field.

The individual provisions of the law were significantly amended in 2014. This is because the South Korean government built the Sejong Special Self-Governing City in 2010, to which it relocated the administrative functions of the capital city, Seoul. Based on this Article 32, current South Korean officials are conducting teleconferences and teleworking between Seoul and Sejong City.

Article 48 concerns the principles of business innovation (the re-design of work processes compatible with information and communications technologies). A prerequisite for e-government implementation is to redesign existing

handwritten documentation procedures conceived prior to the introduction of information technology. This redesign of paperwork is not simply pursuing the automation of the current business using computers or network equipment but seeking to innovate the entire administrative work process. Therefore, this law has fundamentally changed the handling of administrative affairs in South Korea and has provided the basis for the government to reach open and customer-oriented government. Thus, the enactment of e-government law is surely contributing to the development of digital government in South Korea.

## Case study: ICT project budget operation – the introduction of "investment first, settlement later"

When transforming to digital government, the most important success factor will be stable financing. In general, budgets are seen as the strongest controls in policy implementation. The success of e-government projects in the US was also driven by the Office of Management and Budget, which oversees the budget. In general, in any country, budgets for informatization are implemented through rigorous procedures.

However, oddly enough, in the late 1980s, South Korea disregarded the existing budget-related procedures and adopted an "investment first, settlement later" approach. This was because the South Korean government at the time recognized the importance of national informatization and promoted the policy priorities. This is recorded in the official book of South Korean e-government published by the government (MOIS, 2017, 20) as follows.

> The National Basic Information System, Once Considered a "Mission Impossible", Made Possible through "Investment First, Settlement Later"
>
> The total cost of the National Basic Information System (NBIS) project was KRW 760 billion ($760 million), a staggering amount of money then, even for the government. Unable to provide the funds through the existing means, the government took an innovative leap and incorporated a subsidiary of the Korea Telecom Corporation to cover the costs of the NBIS's implementation.
>
> The reason that the Korea Telecom Corporation was not able to make a direct investment in the Data Communication Corporation of Korea, provider of the NBIS project, was that the investment was a financial business, in which the invested funds would be returned later, and the articles of association of the state-owned Korea Telecom Corporation prohibited any financial business. After a new funding method was secured, the Data Communication Corporation of Korea began spearheading the NBIS project as the project provider.
>
> Against such a backdrop, the Korea Communication Promotion Corporation was established in November 1986 with 100% of its shares owned by the Korea Telecom Corporation. Soon after its establishment, the

Korea Communication Promotion Corporation announced its plans to provide a total of KRW 151.3 billion ($151 million) – the equivalent of KRW 7.6 billion in 1986, KRW 68.3 billion in 1987 and KRW 75.4 billion in 1988 – to the Data Communication Corporation of Korea. Establishment of the subsidiary and subsequent investment is what truly propelled the National Basic Information System project forward. In January 1987, the National Computer Agency was established for the auditing and review of the project. All of these important steps laid the groundwork for the eventual completion of the NBIS, a national mega project.

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

## Lessons learned: problems of the e-Government Act – establishing ICT governance for digital government

The author was asked to join a research project conducted by the South Korean government in early 2000. It was then that the Ministry of Government Administration and Home Affairs drafted a law to enact the e-Government Act. As a result, a total of six scholars, including four professors of public administration and two law professors, participated in the drafting. The study was conducted for four months from April 2000 to July 2000. In the process, we met weekly to discuss the content of the law and every other week we reviewed drafts with government officials.

At the time, however, South Korean public officials' main concern about the enactment of the e-Government Act was to upgrade the existing office management regulations into law. Therefore, the focus of the law was document reduction and administrative productivity. In contrast, researchers, including the author, set administrative innovations using information technology as the main ambition of e-government law. As a result, many conflicts and confrontations arose during the discussion of the draft law.

In 2000, South Korean government officials thought that e-government would be completed if a high-speed network was installed in government buildings and one PC per person would be distributed to all government employees. Therefore, government officials attempted to limit the content of the law by approaching e-government from a technology-oriented perspective. In contrast, the researchers focused more on administrative innovation within government, from the point of view of social determinism. Furthermore, the goal of e-government was to embody the democratic ideology including electronic citizen participation. As a result of these differences, conflict always arose during the drafting debates.

The different interpretations of these laws ultimately made a big difference in terms of the governance system, or ICT governance. The researchers insisted on setting up an e-government promotion committee and innovating the public sector with strong power. Therefore, a provision of the "e-Government

Promotion Committee" was written in the report of the research submitted to the government. At the time, however, the Ministry of Government Administration and Home Affairs felt burdened with this system and reduced it to a "Document Reduction Committee" in consultation with ministries. The e-Government Act therefore began with the Document Reduction Act. Although the provisions of the Document Reduction Committee were removed from the e-Government Act in 2010, the e-Government Committee has not yet been based on the e-Government Act. Currently, South Korea has established and operated the e-Government Committee for the past five years but its operation is based on departmental regulations and not in law.

Therefore, when enacting laws related to the implementation of e-government and digital government in the future, the ICT governance to promote this process should be clearly defined in the content of the law. In the United States, the e-Government Act established and operated an Office of e-Government (OEG) within the OMB and also regulated the authority and role of the OEG director. Likewise, in many countries, it is time to legislate the ICT governance for the implementation of digital government.

## Notes

1 In the case of South Korea's telecommunication infrastructure construction projects, there are many overlapping periods. The reason for this is that communications infrastructure construction projects are often completed earlier than the planned target year, and thus the schedule is overlapped with follow-up projects.
2 In the case of the construction of a high-speed public network, private telecommunications carriers used their own funds. However, the government provided financing for part of the investment cost to the telecommunications service providers who were suffering from introduction of competition with huge investment funds in the telecommunications business.
3 In the case of the Kim Dae-jung government's e-government projects conducted in 2001–2002, the Ministry of Information and Communication fully supported e-government by allocating the Information Promotion Fund to e-government projects.
4 The existing resident registration number structure is designed assuming that the life span of a person does not exceed 100 years, in response to the ageing society, so it is inevitable that it will be replaced by a new system within the next 50 years.

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# 11 The ICT ODA status of South Korea[1]

## Introduction[2]

South Korea is the only country in the world to have changed position from an aid recipient country to a donor country. In 2009, South Korea became the twenty-fourth member of the Organisation for Economic Co-operation and Development Development Assistance Committee (OECD DAC), a group of advanced developed countries working together to provide development aid. In ruins after the Korean War, the country began its economic development by receiving aid from the international community. Starting in 1945, South Korea received $12.8 billion in foreign aid across 50 years. South Korea, which achieved economic development based on such foreign aid, has now grown into the eleventh-largest economy in the world according to recent data from the World Bank. In 1995, South Korea was removed from the World Bank's target list of economic aid recipient countries.

Since the late 1980s, as its economy has continued to grow, South Korea has been making efforts to improve its status in the international community. In particular, the Korea International Cooperation Agency (KOICA), a charitable organization dedicated to granting aid, was established in 1991, the year South Korea joined the UN. Since then, the KOICA has carried out various activities in developing countries such as the construction of roads and bridges, school support, hospital construction and operation support.

Since joining the Development Gateway Foundation (DGF) as a founding member in December 2001, South Korea has pursued a consulting project to transfer information technology experiences from developed countries and advanced countries to developing countries. In the United Nations e-Government Surveys of 2010, 2012 and 2014, South Korea consistently ranked first in the e-government readiness index (UN, 2010, 2012, 2014).[3] In addition, many of South Korea's e-government practices until now have been introduced to the world as the best cases, receiving worldwide acknowledgment. In addition, the level of South Korea's informatization is recognized by the world, as can be seen from the fact that the country also ranked first for three consecutive years in Digital Opportunity Index of the International Telecommunication Union (ITU). The results of South Korea's e-government services are globally selected as best practices (Chung and Kim, 2017).

As such, South Korea is a world-leading country in e-government, acknowledged by the United Nations and many government agencies as maintaining a very high level of informatization. Accordingly, there is growing interest in official development assistance (ODA) in the information and communication technology (ICT) and e-government sectors and various measures are being proposed to improve the effectiveness and efficiency of ODA. As a result, e-government-related businesses are steadily increasing in the field of ODA and the e-government is expected to grow into Korea's flagship ODA.

Specifically, in 2010, the South Korean government agreed with the United Nations to jointly implement the "UN Public Administration Knowledge System Establishment Project" under consideration by the UN Economic and Social Council. South Korea has now decided to pass on the experiences and know-how of building administrative systems to the UN headquarters 60 years after emerging from the disastrous Korean War (MOIS, 2017). From this point of view, the contents of this chapter are summarized by the following chapter headings.

- ICT ODA trend analysis
- The development process of South Korean ODA
- South Korea's ICT ODA status
- The development plan of South Korean ICT ODA

## ICT ODA trend analysis[4]

The ICT sector is essential in development aid for developing countries. In 2000, only 12% of the world's population used mobile phones, but as of the end of 2019, 5 billion mobile phones were used worldwide, with half of them being smartphones. As a result, the number of users on the Internet is exploding. However, these ICT developments have resulted in deepening the gap between the rich and the poor by further widening the digital divide between developed and developing countries (OECD DAC, 2007). Therefore, development assistance to and cooperation of the ICT sector with developing countries is urgently required today amidst the rapid development of information and communication technologies.

### *The main projects of ICT ODA*

ICT sector projects involve building ICT infrastructures in developing countries, which is closest to the field of communications (220) in the OECD CRS classification. The appropriate fields for South Korean ICT ODA projects include establishing a master plan for establishing ICT infrastructure, training ICT manpower, upgrading ICT networks, building ICT, building ICT R&D systems and establishing ICT management systems (KOICA, 2008). These projects can be divided into consulting on the informatization policy of developing countries, establishing informatization infrastructure in developing countries, improving information utilization environments and developing human resources for the

informatization of developing countries. In particular, the introduction of ICT in public administration, which is a representative part of ICT utilization, is considered to be the e-government project.

The e-government project is a project to build a system that utilizes ICT to store and share public information such as taxes, customs and registration, and to provide public services (NIA, 2016). This is divided into the government information business, which introduces ICT to the administrative tasks of public officials, and the service informatization project, which introduces ICT to deliver public services to the private sector. Therefore, the broad and comprehensive demand for ICT ODA in public administration is expected to increase rapidly in the future.

### *International development banks' ICT ODA status*

International development banks are steadily increasing their support for ICT sectors in developing countries. This is because investment in the ICT infrastructure sector has a positive impact on poverty eradication in developing countries. Since 2001, they have supported the reform of the ICT sector in developing countries through the privatization of business operators, introduction of competition and strengthening of ICT policy capacity (EIBK, 2015).

#### *The World Bank*

The World Bank, through the e-government promotion group under the ICT Sector Unit, provides technical advice and investment support for strategies, policies, regulations, organizational structure, shared infrastructure and services. The e-Transform Initiative is being implemented to support transformation through innovation. Of the major ICT projects supported by the World Bank since 2000, 33 projects have been identified as including e-government as the core content. In addition, the scale of the projects covered a range from a minimum of $2.3 million to a maximum of $210.1 million.

In particular, it follows from the Strategic Plan Report for 2012–2015 that the World Bank's ICT development strategy for developing countries is focused on building ICT infrastructure and institutional reforms and enhancing information accessibility. It also focuses on strengthening human capacity in the field of ICT and developing ICT applications and enhancing the effectiveness of technology development through partnerships with the private sector.

#### *The Asian Development Bank*

The Asian Development Bank (ADB) has focused on infrastructure, equipment and devices, ICT applications and IT networks based on ICT demand from member developing countries in ICT development cooperation. According to the ICT utilization strategy announced in 2003, the ADB's activities involve (1) enhancing policy, enhancing public institution capacity and constructing

infrastructure for building a viable environment; (2) expanding ICT utilization capacity and training human resources with specialized skills; and (3) information content development.

The ADB also recognizes the potential of providing fast and efficient public services through strategic and effective use of ICT and has encouraged developing countries to actively use ICT to improve public governance. Public governance and service provision using ICT are aimed at innovation using ICT's transformational potential rather than simple automation of existing processes that incorporate ICT. A total of 14 major e-government projects were supported by the ADB from 2000 to 2014 (Asian Development Bank, 2016).

## The development process of South Korean ODA

South Korea is the only country in the world to have once received aid and now be providing aid assistance. Aid that contributed to South Korea's economic development has changed in many ways.

### *As a recipient country*

South Korea received ODA from foreign countries totalling $12 billion. Ranging from emergency relief to structural readjustment programmes, ODA significantly contributed to South Korea's economic and social development (Korea ODA, n.d.).

After the Korean War (1950–1953), ODA was the only source of capital, since the Korean economy had mostly been devastated by the war. Much of the assistance provided in the 1950s was focused on military support and humanitarian relief. Food aid and daily necessities were also provided to meet the basic human needs. In the 1960s, "growth" and "foreign investment" replaced "humanitarian relief" and "reconstruction" of the war-torn country as South Korea dramatically transformed its economic structure. Whereas ODA in the previous decade had mostly taken the form of grants to facilitate reconstruction, more concessional loans and other forms of financial investment came to South Korea, allowing it to build social infrastructure and promote industrial development.

In the 1970s and 1980s, standalone project financing introduced to heavy and chemical industries increasingly gave way to sector-wide loans or readjustment programme loans aiming to reform the overall economic and industrial structure. The proportion of grants declined significantly and the sources of assistance continued to diversify. In the 1990s, South Korea came to reverse its position from recipient to donor.

### *As a donor country*

In 2010, South Korea became the twenty-fourth member of the OECD Development Assistance Committee (OECD DAC), the international donors'

club. Upon joining the OECD DAC in 2010, South Korea has continuously improved its ODA system by enacting the Framework Act on International Development Cooperation (Framework Act) and devising the Strategic Plan for International Development Cooperation (Strategic Plan) as well as the Mid-Term Strategy for 2011–2015 (Korea ODA, n.d.).

Furthermore, South Korea has worked to engage in the efforts of global development by leading the adoption of the Development Agenda at the G20 Seoul Summit in November 2010 and successfully hosting the Busan HLF-4 in November 2011, serving as a bridge among developed, emerging and developing countries and leading the launching of Global Partnership for Effective Development Cooperation.

### *The paradigm shift around ICT ODA*

South Korea's aid to developing countries was initially focused on road construction, bridge construction and school building. Later, the level of assistance was improved through the process of building hospitals, dispatching doctors and operating and supporting the hospital administration. Since South Korea ranked first in the UN e-Government Survey for three consecutive times in 2010, 2012 and 2014, the form of aid has been rapidly changing.

In particular, after the UN's announcement of its Sustainable Development Goals (SDGs) in 2015, the ICT ODA sector has been expanding rapidly. ICT contributes to national development in a variety of ways, including facilitating information and data flow, improving productivity and efficiency and improving access to information and services. Therefore, many developing countries are asking for ICT ODA from South Korea.

Reflecting this trend, the size of ICT ODA in South Korea has rapidly increased in recent years. Before 2010, the ICT sectors in ODA comprised only 3 per cent of the total. However, considering the characteristics of ICTs that play a role in the SDG system, the scale of the ODA range in the field has recently been estimated to account for about 7 per cent of the total (KISDI, 2015).

In particular, the ICT sector has played a very important role in South Korea's ODA. For example, KOICA has promoted over 130 e-government ODA projects from 2007 to 2015. By 2015, the cumulative amount of South Korea's ODA assistance in the ICT sector was $174.7 billion, accounting for about 15 per cent of total ODA. In addition, South Korea's ICT ODA is very active considering that the share of ICT in ODA was 3 per cent in Japan and 2 per cent in the US as of 2015.

## South Korea's ICT ODA status

Currently in South Korea, ODA is led by KOICA. The Economic Development Cooperation Fund (EDCF) is also being promoted through the Export-Import Bank of Korea. And with regard to ICT ODA, NIPA and NIA perform practical tasks. Among these, the current status of ICT ODA in the NIA is as follows (NIA, 2019).

### *The Information and Communication Technology Cooperation Centre*

The Information and Communication Technology Cooperation Centre (ITCC) is a bilateral project between South Korea and partner countries. The Centre facilitates bilateral cooperation and informatization of both South Korea and its partner countries through joint R&D projects, ICT consultations and technology and manpower exchanges. The Centre provides the foundation upon which partner countries can share and obtain experiences, know-hows and technologies that South Korea has learned throughout the ICT development.

### *The Korea ICT Learning Programme*

The Korea ICT Learning Programme (KoIL) invites policy makers, public officials and experts in the ICT field to share the newest technologies and issues to be reflected on national policies and plans in order to address welfare, poverty, economic and educational challenges using ICT tools. Since 1998, 4,993 participants from 133 countries have taken part in the programme.

Participants in KoIL learn South Korea's ICT development strategies, discuss current issues and trends and seek means of cooperation to advance their nations' strategies on ICT planning, information security, rural informatization and incorporation of new technologies.

KoIL also offers the Global ICT Leadership Forum to participants every year. The forum consists of topics such as the following: "ICT Solutions for Government and the Public Sector", "Analysis of Big Data, Cloud and Mobile", "Building Smart Cities for a Sustainable Future", "Privacy Protection and Security Solutions" and many other ICT-related topics.

### *Information access centres*

The National Information Society Agency (NIA), a subsidiary organization under the Ministry of Science and ICT (MSIT), has tried its best in its mission to develop South Korea into an information-oriented society and to reduce information gaps between individuals both domestically and internationally.

NIA and the beneficiary organization together find the best way to organize the layout to meet regional demands of information access centres (IACs). For example, the number and size of the ICT Training Lab can be changed according to the expected participants per course. The customizing approach to the IAC establishment ensures the utmost effectiveness of IACs.

### *Joint Technical Assistance (TA) on ICT with international organizations*

"Joint Technical Assistance (TA) on ICT" is a series of projects in which South Korea joins hands with international organizations and multilateral development banks to share its experiences and expertise in national informatization through technical assistance programmes (consulting, workshops, seminars and study

tours) for the sake of helping partner countries with their progress in national informatization.

The projects are aimed at reinforcing ICT partnerships with international organizations and countries in strategic cooperative relationship through technical and manpower exchanges and further contributing to closure of the global digital divide.

Since 2013, South Korea has cooperated with international organizations and multilateral development banks to identify the demand for ICT technical assistance in countries in transition and each year provided around five cases of such assistance in the form of consulting, technology/policy sharing seminars or workshops, a South Korea study tour etc.

### *World Friends ICT Volunteers*

World Friends ICT Volunteers are dispatched to partner countries to support increasing the quality of life by building ICT capacity. They provide the partner countries and organizations with ICT learning courses and ICT-related volunteering activities to meet the demand in sharing their ICT knowledge and skills.

Furthermore, World Friends ICT Volunteers participate in ICT projects such as the development of websites or ICT applications, while conducting co-projects with students and faculties of various organizations, universities and schools.

### *The e-Government Global Academy*

With the demand for the establishment of a specialized educational institution that can introduce South Korea's excellent e-government to developing nations and share knowledge with them in the area, the e-Government Global Academy was established in January 2013 as a specialized branch of the National Information Society Agency, the leading informatization institution of South Korea.

The e-Government Global Academy has developed various e-government and ICT-related education and training programmes, which are targeted towards government officials working to develop their nations. Furthermore, the Academy is supporting the informatization consulting capability for developing nations by training global e-government consultants. The Academy will do its utmost to achieve its vision of becoming the world's best e-government and ICT academy. Moreover, based on South Korea's world-class e-government, the Global e-Government Academy will contribute to enhancing the informatization level of nations around the world, playing a pivotal role for the prosperous future of the information society.

### *Consulting on e-government*

South Korea supports partner countries in building e-government. The South Korean government provides tailored consultation to partner countries for establishing informatization strategies and master plans or designing relevant

systems based on South Korea's e-government knowledge and experience. The NIA's consultants are expert, highly trained individuals possessing extensive experience of digital transformation in the public sector.

They deliver a high level technical knowledge, including but not limited to the fields of e-government, smart cities, open government, intelligent transportation systems and e-procurement. The maximum duration of a consultancy is six to nine consecutive months per year. Consultants deliver their knowledge and skills to partner countries and work under any type of partnership agreement or any other cooperation programme between South Korea and its partner countries.

### *The e-Government Cooperation Centre*

The concept of the e-Government Cooperation Centre (eGCC) was first launched in 2003, and the Ministry of Interior and Safety (MOIS) and National Information Society Agency (NIA) of South Korea have worked together since 2010 to provide more intensive support to international cooperation in the e-government sector.

After signing a memorandum of understanding, the South Korean government and its partner countries each contribute budgets in operating an eGCC accordingly. By building an e-Government Cooperation Centre in a country that wishes to adopt the South Korean model of e-government, South Korea and its partner countries jointly run the centre for three years. An e-Government Cooperation Centre serves as a platform to support joint research projects, consultation on informatization policies and exchange of IT technology and manpower.

## The development plan of South Korean ICT ODA

South Korea is a country that has experienced rapid economic growth based on ICT and has various development experiences such as having establishing policies for ICT development at the national level and having carried out ICT professional training programmes. In particular, many developing countries have tried to benchmark South Korea's ICT development experiences and advanced technologies and the demand for cooperation has been steadily increasing.

In response to these demands for cooperation, the South Korean government has been carrying out various forms of ICT cooperation projects. Cooperation was carried out in the field of ICT infrastructure support (communication network construction, ICT environment improvement, equipment support etc.) and ICT capacity building (policy advisory, invitational training, scholarship projects, dispatch of experts and volunteer groups etc.). However, due to the newly adopted UN SDGs, the South Korean government's new ODA plans and the development of ICT technology, there is a need to reorganize ICT ODA goals and projects and set up strategies for each recipient country accordingly.

### *The UN's Sustainable Development Goals*

In 2015, the United Nations adopted 17 Sustainable Development Goals (SDGs). These forms a follow-up agenda for the Millennium Development Goals (MDGs) proposed at the beginning of 2000, with additional considerations for environmental protection. In line with this action, countries around the world are focusing their ODA goals to accomplish the SDGs; similarly, South Korea's ICT ODA needs to be newly adjusted in this context.

ICT can play a significant role in achieving the SDG goals, including striving for zero hunger – achieving food security and improved nutrition and promoting sustainable agriculture (Goal 2); clean water and sanitation – ensuring the availability and sustainable management of water and sanitation for all (Goal 6); affordable and clean energy – ensuring access to affordable, reliable, sustainable and modern energy for all (Goal 7); and climate action – taking urgent action to combat climate change and its impacts (Goal 13).

In addition, ICT can contribute directly to and is committed to implementing the objectives of four goals, namely quality education – ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all (Goal 4); gender equality – achieving gender equality and empowering all women and girls (Goal 5); industry, innovation and infrastructure – building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation (Goal 9); and partnerships for the goals – strengthening the means of implementation and revitalizing global partnerships for sustainable development (Goal 17).

ICT has a profound impact on how education, delivery and monitoring can improve in the education sector in addition to how the types and experiences of skills are becoming increasingly important in future careers. By utilizing ICT, access to educational services and contents can be facilitated and timely education can be provided through various devices such as mobile phones in a cost-saving and equitable manner. Known as e-learning and computer-based education, cyberlearning is an example of expanding educational opportunities. As such, ODA through ICT convergence affects almost all fields of development.

### *The Comprehensive Implementation Plan for International Development Cooperation*

In June 2017, the South Korean government announced the Comprehensive Implementation Plan for International Development Cooperation, which was established in cooperation with related ministries and presented the future direction of South Korea's ODA as effective, transparent and collaborative. "Effective ODA" focuses on using the SDGs and the Country Partnership Strategy (CPS) as the principle of resource allocation and increasing the effectiveness of aid through collaborations among projects.

"Transparent ODA" emphasizes strengthening the transparency of operations by expanding information disclosure of business processes and strengthening

on-site inspections. Finally, the "collaborative ODA" direction contains a plan for cooperation in carrying out ODA with the private sector, other donors and international organizations. The announcement differs from previous comprehensive plans by presenting the new vision of ODA for strengthening transparency and restructuring projects with low value and relevance. Thus, the necessity of restructuring the ICT ODA sector in accordance with the overall direction of the South Korean ODA proposed by the newly launched government is also being raised.

### *Response to rapidly changing ICT technology*

Finally, the impact of rapidly changing ICT technology on society is being emphasized more and more today. Fourth Industrial Revolution technologies including artificial intelligence (AI), blockchain, virtual reality (VR), big data, the internet of things (IoT), fintech, autonomous vehicles and 3D printing are gradually bringing about changes in industry, life and institutions around the world. It is a common perception that advanced technologies are first applied in developed countries and before spreading to developing countries. But sometimes the latest technologies are used in the least-developed areas, exemplified by how the IoT improves agricultural productivity in underdeveloped countries and fintech enables financial transactions where financial infrastructure is lacking.

In addition, appropriate technologies developed in the most constrained environments can bring new innovations to developed countries. Therefore, efforts should be made to more actively discover the latest technologies applicable to underdeveloped countries, not limited to conventional ICT ODA, which transfers South Korea's experience in developing ICT to developing countries. Start-ups, non-governmental organizations (NGOs) and international organizations have attempted to bring the latest technologies and innovative methodologies to the ODA, some of which may be referenced. The conclusion is that now we are in a new era of intelligent information technology and ICT ODA should also move beyond the traditional framework and test new innovative approaches.

## Case study: a message from the president of the NIA: a step towards a more equitable global village

### Greetings from the NIA!

Today, we are rapidly evolving into an intelligent information society driven by the Fourth Industrial Revolution, which can be described as the convergence of computing data, artificial intelligence and universal connectivity. The new wave is fundamentally altering the social fabric of our times in ways that were previously unthinkable.

Many countries in the world are already focusing on strengthening national competency by solving all kinds of social issues and creating new

growth opportunities through the development of intelligent information technologies.

On the advent of the Fourth Industrial Revolution, the NIA continues to be the definitive expert agency taking a central role in the informatization of the nation. We have been providing world class e-government services, researching on the national informatization policy, leading the way towards a future intelligent information society through ICT strategy consulting and enhancement of future ICT infrastructure.

And as a responsible member of the global community, we also have been implementing various global ICT cooperation programmes such as establishing information access centres in developing countries, providing ICT consulting through operation of ICT Cooperation Centre. Moreover, we have invited ICT policy makers from developing countries to both support and strengthen digital competencies and the digital literacy of the countries.

As a control tower entrusted with the support role of national CTO and CIO, the NIA will continue with its utmost efforts to build the intelligent information society in order to position South Korea as the leading nation of the Fourth Industrial Revolution. Also, the NIA will not hesitate to maintain strong bonds with the global society to actualize a more equitable Global Village, where no single country is isolated from new opportunities driven by the Fourth Industrial Revolution.

Thank you!

(Moon, Yong-sik, president of the NIA, 2019)

## Lessons learned: expanding ICT ODA by establishing e-governance

In the past, unlike traditional areas for development aid, there was a view that e-government was not essential to developing countries. However, there is now a consensus that increasing efficiency and transparency in the field of public administration through e-government is a necessary condition for increasing the effectiveness and sustainability of aid to underdeveloped countries. Indeed, administrative reform through e-government has proved to have a positive effect on strengthening national competitiveness, reducing public-sector corruption, increasing administrative efficiency and improving administrative services in developing countries, inducing economic development in developing countries and developing democracy through increased citizen participation.

With the growing recognition that the introduction of e-government in developing countries will help enhance ODA effectiveness and sustainable development, ODA projects in the e-government sector have recently increased. Currently, South Korea is the only country that is supporting e-government ODA as an independent type of project. As such, e-government support based on South Korea's administrative informatization experience and ICT technology has

brought positive changes to the economic and social development of developing countries such as spreading e-government services and the informatization mindset, and improving the governance of developing countries.

However, despite the importance of the e-government sector, the impacts of e-government (efficiency, transparency etc.) are often indirectly observed through laying the foundation for performance improvement in other sectors etc. Thus, in the process of determining national development priorities in recipient countries, in some cases, e-government projects have fallen behind in competition with projects in other sectors such as transportation, health and education.

Therefore, in response to changing e-government demands and environmental conditions of recipient countries, the e-government projects that are currently remaining in traditional administrative services should be expanded to other areas such as education and healthcare. Moreover, it is time to support the establishment of e-governance. Since reform of governance has a positive effect on e-government projects as well as enhancing aid effectiveness in other sectors, there is a need to actively support this effort.

## Notes

1 The contents of this chapter may be a bit far from the main success factors in promoting the South Korean e-government. However, South Korea is the most successful example of its outstanding development performance through the development of the ICT sector. South Korea's ICT development experience and achievements are highly regarded in the international community, and the demand of developing countries to benchmark South Korea's ICT development model is steadily increasing. Therefore, I edited this topic by binding it to the aforementioned success factors.
2 The contents of this section are taken from a recent paper I published (Kim et al., 2018, 359–361).
3 The United Nations e-Government Survey in 2016 ranked South Korea third in the world after the UK and Australia. This was due to the decline in the human capital index based on the decline in college admissions; it once again proved to be the world's top e-government nation in the relevant index in the same survey. In 2018 the e-Government Survey ranked South Korea third in the world after Denmark and Australia.
4 The contents of this section are taken from a recent paper I published (Kim et al., 2018, 362–364).

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# Part V

# Key challenges in the future

# 12 The emergence of intelligent digital government in South Korea

## Introduction

Today, the world is rapidly changing from an information society to a smart artificial intelligence (AI) information society due to the rapid development and covergence of ICT and AI. Due to technological advances in AI, we are entering a new world that is very different from the past. The government is now able to provide a basis for pre-emptive provision of customized administrative services to all citizens. Governments around the world are actively pursuing intelligent digital government policies to cope with this trend.

The South Korean government has been pursuing intelligent digital government policies in earnest since 2016. In this chapter, first, I would like to examine the meaning of the Fourth Industrial Revolution, which led to the advent of the intelligent information society. After analysing the ten technologies for implementing intelligent e-government, I will review the various intelligent digital government promotion policies that have been pursued by the South Korean government (MOIS, 2019). Finally, I would like to examine the smart city promotion policy that the South Korean government has adopted as the growth engine of the next generation of ICT. The contents of this chapter can be summarized by the following headings.

- the meaning and status of the Fourth Industrial Revolution: the advent of the intelligent information society and South Korea's policy response
- intelligent information technologies that can change the government: the top ten e-government technologies as selected by the South Korean government
- the South Korean government's intelligent digital government promotion policies
- smart city policy promotion status in South Korea

## The meaning and status of the fourth industrial revolution: the advent of the intelligent information society and South Korea's policy response

The topic of the Davos Forum held in Switzerland in January 2016 was "Mastering the Fourth Industrial Revolution". The Fourth Industrial

Revolution is based on ICT convergence; the products that apply new technologies, such as AI robots, the internet of things (IoT), mobile, 3D printing, driverless automobiles and nano-/bio-technology will serve as the driving forces of social development. Such technical innovations will not only change the way the industries, societies and governments are controlled but also radically change the way that normal people live. Through such a Fourth Industrial Revolution, we are approaching a new world that will fundamentally change the ways of our lifestyle and work environment. The scale, range and complexity of such changes will be completely different from what humankind has ever experienced before (Chung, 2017).

Although the Fourth Industrial Revolution is capable of rapidly increasing efficiency and productivity, it also receives attention with regards to the "job shock" effect. At the Davos Forum, it was pointed out that progress in AI will take away jobs and intensify the unequal distribution of wealth. Accordingly, in such an AI-based smart intelligent information society, ICT-based collective government innovation must be attempted for the government to recognize that its competitiveness can be reinforced and that it is important to take anticipatory measures.

### *The emergence of the smart intelligent information society*

Today's information society is changing into a smart intelligent information society due to the introduction and utilization of smart intelligent information technology, which has made a great revolutionary change not only in the development of technology but also at the individual level, in households and in national society in general.

This intelligent technology will drastically strengthen the thinking ability of people and things. This will allow humans to make better decisions and things to solve problems on behalf of humans. Therefore, the internet of things is attracting attention as a new key source of creating added value that will lead the era of future intelligence. Specifically, a variety of intelligent information technologies such as IoT, AI, robotics and big data will be combined to lead to a new paradigm shift of digital government.

Therefore, the emergence of the smart intelligent information society has brought about a great change in the administrative aspect as well, affecting almost all sectors such as administrative organization, administrative behaviour, policy process, manpower management, office efficiency, administrative service and information-related systems and policy.

This smart intelligent information society can be defined as follows. The intelligent information society is based on a sophisticated information and communication technology infrastructure where created, collected and stored data and artificial intelligence (AI) are combined with intelligent information technology to enable new value creation and universal development in economic and social life in all areas. In addition, data and knowledge become more important than existing production factors (labour, capital etc.), industrial boundaries

are collapsed due to various products and service convergence and automation through intelligent machines is extended to intellectual labour.

In the information society, human beings are still the subjects of judgement and execution, but in the intelligent information society, it is not necessarily people who make such judgements and execution due to the ability of artificial intelligence to do so. Therefore, the government should prepare for the transition to smart digital government in response to this smart intelligent information society.

### *The 6th Promotion Plan for National Informatization (2018–2022)*

In December 2018, the South Korean government shifted its national informatization paradigm to respond to the Fourth Industrial Revolution. It established and published the 6th Promotion Plan for National Informatization to promote innovation and public proliferation in the public sector through digital transformation of national informatization projects. The main contents of this 6th Promotion Plan for National Informatization are as follows (NIA, 2019).

Under the vision of "Korea Living Happily Together with Intelligence", the 6th National Informatization Promotion Plan articulated four goals:

- building an intelligent nation responsible for the lives of the people
- catalyzing an economic leap through digital innovation
- digital trust society together
- creating a secure intelligent network infrastructure

In order to achieve the goals of the Promotion Plan, the government aims to promote a national information policy that facilitates and spreads intelligence by providing 4 strategies and 13 tasks covering all fields such as public-industry-society-foundation (NIA, 2019, 15–17).

The four strategies are as follows. The first plan is to promote national digital conversion with intelligence. The second plan is to build growth engines through digital innovation in the field of economy and industry. "Data" is emerging as a key element to lead the intelligent information society. The third plan is to speed up a human-oriented intelligent information society. The government intends to strengthen literacy education enough for South Koreans to enjoy life as digital citizens so that all people can freely use digital tools, services, media and information. The fourth plan is to build a trust-oriented intelligence base. The government supports the early commercialization of the 5G mobile system (the first in the world) and is actively promoting convergence with other industries and services based on 5G infrastructure.

In the Promotion Plan, it is expected that services for the people will be routinized and upgraded based on hyper-connected intelligence so that the people can live safer and happier lives. An inclusive intelligent information society in which anyone, including the vulnerable, can benefit from intelligent information technology without discrimination will be realized by successfully implementing the strategies and tasks presented above. Also, the vitality of the

national economy will be enhanced and new growth engines will be created by creating new added value using intelligent information technology throughout the economy.

## Intelligent information technologies that can change the government: the top ten e-government technologies as selected by the South Korean government

Recently, many international consulting companies have been researching and announcing ICT trends for conversion to digital government. As a representative example, the Gartner Group selected blockchain, machine learning, smart workspaces, conversational user interfaces and event stream processing (ESP) as five information technologies that could make the biggest changes to government organizations within the next decade (Gartner Group, 2018). Accenture has also been announcing its "Technology Vision" every year for three years since 2017 (Accenture, 2019). The selected trends of 2017 were AI as the New User Interface (UI), ecosystem power, workforce marketplaces and design for humans and the uncharted. As such, the technologies chosen by Accenture are complex technology designs that will drive future growth. In 2018, citizen AI, extended reality, data veracity and frictionless business and the internet of things were selected. The most recent trends selected in 2019 were DARQ Power, Get to Know Me, Human + Worker, Secure US to Secure ME and My Markets. Thus, today, technologies for digital government are all gathering around AI and its applications.

In response to this global trend, the South Korean government has since 2015 also been annually selecting ten ICTs that will lead digital government. These are briefly summarized as follows.

### *2015's top ten ICTs for digital government*

The work to choose ten annual ICTs that could lead government was carried out by the National Information Society Agency (NIA), an e-government professional implementation agency, and the technologies were selected through the following three steps. First, the NIA selected about 30 technology trend candidates after analysing and surveying about 160 technology trends from 15 domestic and overseas consulting institutes and future books such as the Gartner Group, IBM, McKinsey, IDC, Accenture and METATREND. In the second stage, 16 technology trends were selected among 30 candidates by ten e-government experts. The NIA then conducted an online Delphi survey of 100 e-government experts in the third round to select the final ten technology trends.

The following are the top ten information technologies selected in 2015.

- intelligent-sensing IoT
- big-stream big data
- wearable user experiences
- omni-channel customer service

- Everywhere Web
- the third platform
- context-based deep learning
- cloud client
- cloud collaborative work
- risk-sensitive self-protection

The shared characteristic of 2015 technologies was the use of the internet of things within government. The internet-based e-government services were to introduce intelligent sensing objects to the public sector such as disaster safety, environment and energy. In addition, a possibility of pre-emptive customized e-government service through context deep-running was sought. Furthermore, smart devices are now wearable via mobile.

### *2016's top ten ICTs for digital government*

Improving upon the 2015 survey, the 2016 survey was conducted in four steps with one additional step that involved a survey of technical experts. The technology trends selected in 2016 were as follows.

- intelligent machine running
- open IoT platforms
- smart public cloud
- moment big data
- algorithm-based data analysis
- biometric-based authentication and security
- mobile augmented reality
- O2O service technology
- intelligent mobile life care
- realistic UX-based wearables

The most notable technology in the 2016 survey was intelligent technology. Thus, the context deep-learning of the past turned into intelligent machine learning. Accordingly, the use of algorithms in data analysis was highlighted. Furthermore, with respect to the identification functions of smartphones and mobile devices, the survey also highlighted biometrics-based authentication and security.

### *2017's top ten ICTs for digital government*

In 2017 the South Korean government announced the following top ten information technologies.

- powerful artificial intelligence
- situation-awareness robotics
- IoT transformation

- the multi-cloud
- big data and niche data
- intelligent security architecture
- virtual reality and augmented reality
- blockchain
- next-generation mobile communication: 5G
- smart city grids

In the 2017 survey, the South Korean government announced the results of the survey in accordance with three technical trends: "technology transformation", "human-centric intelligence" and "everything in connectivity". In 2017, the emphasis on artificial intelligence technology was affected by the Davos Forum in 2016. In addition, blockchain appeared in the list for the first time, 5G emerged as the next-generation communication infrastructure and the smart city policy was emphasized as part of the government agenda.

### *2018's top ten ICTs for digital government*

In January 2018, the South Korean government announced the following ten information technologies leading intelligent e-government.

- interactive artificial intelligence platforms
- smart city and IoT
- cloud platforms
- on-demand big data
- intelligent automatic security
- non-contact biometrics
- mixed reality
- blockchain networks
- next-generation mobile communication: 5G
- public multi-drones

Features of the 2018 technology trend were to pursue a customized administration that takes care of the needs of the people in advance of their request. To this end, the government intends to provide a robot secretary who communicates with the public by applying AI technology to the administration. This means that the secretarial function of smart speakers used in the private sector will be applied to administrative tasks as well. In order to establish data-based policy, analysis is carried out with the data that the public wants. In 2018, the South Korean government designated Sejong City as a Smart City National Demonstration Area and created a testbed that utilizes autonomous vehicles and IoT. What is remarkable is that it will provide convenient authentication methods through non-contact biometrics such as iris recognition, facial recognition and gait information by replacing existing certification. The government will also use a variety of drones for military, logistics and postal delivery purposes.

### *2019's top ten ICTs for digital government*

In February 2019, the South Korean government announced its top ten information technologies that implement intelligent government and create new value for the public.

- emotional artificial intelligence
- response-type IoT
- the multi-cloud
- unstructured data analysis
- artificial intelligent automatic security
- extended reality
- blockchain platforms
- 5G infrastructure
- edge computing
- artificial intelligence ethics

In 2019, the South Korean government selected three service areas to lead intelligent government, as follows (MOIS, 2019). The first area is "intelligent service to take care of" the needs of the people. For this, emotional intelligence is utilized. With the advancement of artificial intelligence, it is now possible to understand the situational context in addition to the sentence context. In addition, a variety of unstructured data can be collected and analysed to provide new services, and it is possible to interact with the people in real time. Through this, it will be possible to grasp the hidden demands of the people.

The second area of service is the "smart work environment created by digital". Specifically, "multi-cloud", "edge computing" and "extended reality" (XR) technologies are used to eliminate time and space barriers and provide a smart work environment. By utilizing the public and private cloud without barriers, it is possible to create an open work environment that meets the needs of its users.

The third service area is "mesh security and infrastructure without blind spots". The South Korean government selected blockchain as a core technology of the digital government for the third consecutive year, reflecting the fact that various blockchain projects are underway in the public sector. In addition, the government is building 5G network infrastructure that can rapidly process vast amounts of data and deliver diverse content to implement intelligent government.

Finally, the fourth servie area is artificial intelligence ethics, which emerged for the first time in 2019. In the future, the South Korean government will prepare and present the principles and standards to be followed when the government provides artificial intelligence-based services to the public.

## The South Korean government's intelligent digital government promotion policies

Due to the recent rapid development of ICT convergence, the new e-government will utilize intelligent information technology to achieve government innovation

and sustainable development. In response to these AI technologies, the South Korean government announced three intelligent digital government policies from 2016 to 2019 as follows.

### *The 2016 e-Government Future Policy: e-Government 2020 Basic Plan*

In April 2016, the South Korean government announced "Vision 2020" as a new e-government future strategy (MOIS, 2016). In the e-Government 2020 Basic Plan, the government will provide "citizens emotional service", "intelligent information-based advanced administration", and a "sustainable digital new deal" in order to realize the vision of "Enjoy Your e-Government!" To realize this vision by 2020, five strategies such as a government service redesign, intelligence administration based on prediction and e-government ecosystem coexistence with industry were suggested.

First, through a "government service re-design", convenient service that the people want is created. This enables citizens to process their own needs without any paper documents (all digital), through one authentication process (one pass), and without restriction on location, time and (mobile) device (do it yourself); that is, people will be able to make their own use of public services or businesses.

Second, the government will use intelligent information technology to develop optimal alternatives and policies for complex social issues such as disaster management, safety and security, and will make intelligent decisions that respond to to citizens' needs immediately.

Third, by developing a new e-government service that utilizes new ICT technologies such as artificial intelligence, 3D printing and drones for "creating a new ecosystem that coexists with industry", the government supports the development of intelligent information industry.

Fourth, to create a trust-based futuristic infrastructure, the government and the private sector should create a joint internet-based IoT platform, prepare for new types of information security threat and build a cloud-based next-generation administrative information infrastructure to jointly utilize information resources and strengthen information sharing and collaboration between departments.

Fifth, e-government cooperation centres were established in each of the five regions of the world in order to promote the "global e-government order" of South Korea.

In order for the e-Government 2020 Basic Plan and its implementation to be realized appropriately, it is important to strengthen e-government performance management linked with government innovation, such as establishing e-governance at public agencies. It is also necessary to implement appropriate change management methods, such as strengthening linkages between basic plans and e-government budgeting, changing e-government governance, streamlining certification systems and providing public-based services.

### *The Intelligent Government Basic Plan (2017)*

After the confrontation of a human with artificial intelligence system AlphaGo in a game of Go held in South Korea in March 2016, the digital government's driving environment rapidly changed the use of artificial intelligence. As the superiority of artificial intelligence has been proved, the combination of data and artificial intelligence can enhance the rationality of administration and customized administrative services according to each region and income level. Therefore, e-government based on existing online services is being converted to digital government that supports offline service required in real life by utilizing artificial intelligence and data. In response to this intelligent digital government, in March 2017, the South Korean government announced an Intelligent Government Basic Plan (MOIS, 2017).

Intelligent e-government, when narrowly defined, is next-generation e-government that utilizes cutting-edge technologies such as artificial intelligence and big data. In a broad sense, intelligent e-government combines new technology and human creativity to provide services that impress people and work with the people to support smart state administration.

It can also be defined as a government that obtains the trust and support of the people by first locating and proposing the necessary services for individual citizens and opening and sharing all government information in a transparent and safe manner.

For the implementation of intelligent e-government, the South Korean government has set itself the goal of having "an impressive and reliable intelligent government" through the four major strategies of "wonderful mind-caring government", "innovative problem-solving government", "sustainable value-sharing government" and "enhanced safety-keeping government".

### *The Digital Government Innovation Promotion Plan (2019)*

On October 29, 2019, the South Korean government announced the Digital Government Innovation Promotion Plan (Joint Ministries of Korean Government, 2019). Pursued with the vision of "a good world enabled by digitalization", the plan is the government's response policy in the era of AI and cloud-oriented digital transformation. In response to the need to play a new role in the development of artificial intelligence and cloud-oriented high-tech digital industries, the South Korean government is pursuing digital government innovation by preparing six priority tasks such as revolutionized public service, revitalized public-sector MyData, an upgraded citizen participation platform, implementation of smart work environments, the active use of digital services and the construction of an open data and service ecosystem. The contents of the Digital Government Innovation Promotion Plan are as follows.

- public service innovation: from application-based service to visiting service
- activating public-sector MyData: paper certificates are no longer used

- enhance citizen participation platform: cherish the voice of the people
- smart work environment: office 2PC will cease to exist
- activate cloud and digital service use: from service development to use
- build an open data and service ecosystem: innovate with the private sector

## Smart city policy promotion status in South Korea

Today, countries around the world are making efforts to promote smart cities. This is due to the prospect that the field of smart cities will become the fastest growth engine in ICT and AI applications over the next decade. It also became a significant criterion of national competitiveness and is being recognized as a new business platform in the Fourth Industrial Revolution. Therefore, the concept of the smart city has recently been understood as "city as a platform using ICT and AI", which converges new industry items such as autonomous vehicles, drones, energy-prosumer etc.

South Korea is also pursuing the construction of smart cities as an application field of the Fourth Industrial Revolution and the next-generation growth engine. In August 2017, South Korea's president Moon Jae-in defined smart cities as the "core platform for new growth engines" and declared that "the smart city creation project is an ambitious project by the Moon Jae-in government to lead the Fourth Industrial Revolution". On January 29, the South Korean government designated Sejong's neighbourhood zone 5-1 and Eco Delta City in Busan as the sites for its pilot project on national smart cities. In February 2019, President Moon Jae-in announced his promise of full government support for the new smart cities and efforts to export them.

As a result, the current smart city policy has been promoted as the core business of the Fourth Industrial Revolution by being promoted as the presidential agenda in South Korea. The recent trend of the country's smart city policy is summarized as follows.

### *South Korea's smart city promotion history*

South Korea has a long history of promoting smart cities compared to other countries. This is because the ubiquitous city (u-city) was promoted in earnest since 2003. South Korea has continued to promote urban informatization by enacting the Ubiquitous City Construction Act (U-City Act) in March 2008, utilizing the strengths of the ICT sector. In this process, the goal of the smart city policy has changed from sustainable growth to urban structure intelligence.

Globally, since 2008, multinational companies such as IBM and CISCO have participated in smart city projects and new urban innovation models such as Living Lab have appeared in Europe. Since 2012, smart cities have spread rapidly all over the world by combining technology development such as platform, data analysis and urban development demand in developing countries. In particular, as China began to formally promote smart cities, they spread to developing countries. Also, due to the breakthrough of artificial intelligence technology, various

smart city applications such as autonomous vehicles, intelligent traffic signals and smart crosswalks have begun to appear.

In response to this trend, South Korea also began to revise the existing U-City Act into the Act on the Promotion of Smart City Development and Industry (Smart City Act) in September 2017 and began to promote the smart city policy in earnest. In the past, u-city policy focused on building infrastructure because infrastructure-based ICTs and urbanization should be accompanied by local informatization. However, smart city policies have shifted towards the development of services with AI applications that are related to the lives of urban residents. Ultimately, smart cities involve the functionalization, interconnection and intelligentization of cities' ICT systems.

### *The Smart City Strategic Plan (2018)*

In August 2017, the South Korean government formed the Presidential Committee on the Fourth Industrial Revolution (PCFIR). The PCFIR deliberates upon and coordinates important policy matters pertaining to the development and acquisition of new science and technology, including artificial intelligence (AI) and data technology, as well as new industries and services necessary for South Korean society's adaptation to the Fourth Industrial Revolution. The committee's legal basis can be found in the Presidential Decree on the Creation and Management of the PCFIR, promulgated and effective as of August 22, 2017. The Role of PCFIR is as follows.

- deliberates upon and coordinates policy measures submitted by various ministries and the committee members.
- organizes public campaigns related to the Fourth industrial Revolution and encourages public participation.
- prepares the groundwork for regulatory and institutional reforms in support of public–private partnerships.
- fosters ecosystems for new industries (Special Committee on Smart Cities, Special Committee on Healthcare etc.).

The Special Committee on Smart Cities is a subcommittee of the PCFIR. Therefore, South Korea's smart city policy is being managed by PCFIR's Special Committee on Smart Cities. On January 29, 2018, the PCFIR also announced the "Smart City Promotion Strategy". The background of the strategy is to utilize ICT technology to solve urban problems, improve the quality of life and to promote smart city policy as a future growth engine to cope with the Fourth Industrial Revolution. Based on the analysis of global trends, implications and domestic smart city business, the Smart City Promotion Strategy sets the following policy directions for smart city promotion in the future.

- value orientation
- growth
- problem solving

- approach
- sustainability
- openness
- convergence
- collaboration

### *The Third Smart City Promotion Plan (2019)*

On July 15, 2019, the South Korean government announced the "Third Smart City Promotion Plan", which covers related government policies and major projects as a medium- and long-term roadmap for establishing and spreading smart cities, creating innovative ecosystems and strengthening global initiatives.

The comprehensive policy is a statutory plan based on the Smart City Act, released after the "Smart City Promotion Strategy" announced in January 2018, and will be promoted over the next five years. The government's smart city budget has increased from 4.98 billion KRW in 2017 to 14.66 billion KRW in 2018 and 70.36 billion KRW in 2019. Local governments that are aware of the strategic value of smart cities as a means of solving urban problems are also increasing their participation. Currently, active national projects include two national pilot cities, two innovative R&D demonstration sites, six smart city challenge sites, eight theme-specialized complexes, 37 integrated platform disseminations and 12 smart city-type urban regeneration sites.

The ultimate goal of the South Korean government in its smart city policy is to solve urban problems with space- and data-based services, to create an inclusive smart city that respects citizens, to build innovative ecosystems and to promote global cooperation. To achieve these goals, the government has established four strategies as follows.

- create a customized smart city model for each stage of urban growth (new, existing, old)
- strengthen the base of smart city diffusion
- create a smart city industrial ecosystem
- lead the global market with South Korean smart cities

### *National pilot city (Sejong City and Busan City) status*

In the case of South Korea, the smart city concept was designated as a next-generation growth engine after the Moon Jae-in administration took power in 2017 and is currently actively promoted. Therefore, after the decision of the National Smart City Council in January 2018, the 5-1 living zone of Sejong City and Busan Eco Delta City were designated as smart city national pilot cities.

This pilot smart city will employ the latest and most advanced technologies, such as IoT and AI, to collect data and supply information that will not only help

better manage the cities but also allow them and their residents to use their time and resources more efficiently. The South Korean government has presented full government support for the success of the new smart cities and efforts to export them. The following is a brief summary of the status of the smart city promotion in Sejong City and Busan Eco Delta City.

### *Sejong City (5-1 area)*

Sejong City has been established for the purpose of relocation of South Korea's administrative capital over the past ten years (Chung and Zhan, 2019). Therefore, various government ministries that existed in Seoul were relocated to Sejong City, which now serves as the administrative capital. Sejong City is a special self-governing city located in the centre of South Korea; it became the seventeenth metropolitan city in South Korea as of July 1, 2012. The distance between Seoul and Sejong is only 120 kilometres, and ultimately Sejong may become a mega-metropolis of Seoul. Sejong is about 70 per cent the size of Seoul. It is currently in the first stage of its development plan, constructing a cluster of concrete buildings to be used as government agencies. Sejong City is the place where u-city projects were implemented in the past.

The South Korean government has designated some areas (the 5-1 area) of the existing Sejong City to demonstrate the smart city concept and has established various plans. As of 2019, the population of Sejong City is 300,000, with a goal of 500,000. The 5-1 area designated as a smart city national demonstration area is not currently inhabited. The South Korean government announced that it will build a smart city by investing 700 billion KRW ($620 million) in the 5-1 region of Sejong City by 2021.

The South Korean government hopes to use the Sejong 5-1 smart city as a testbed platform that embodies various Fourth Industrial Revolution technologies and will act as a new growth engine for the economy. Therefore, the Sejong 5-1 smart city will be developed under the theme of building a "sustainable smart city platform boosting citizens' happiness and offering creative opportunities".

To this end, the South Korean government proposed four key elements: mobility, healthcare, education, and energy and the environment. First of all, the Sejong 5-1 Life Zone will introduce a new transportation system based on shared vehicles. Under the plan, people will park their cars at the entrances to residential zones and from there they will use autonomous or shared vehicles or even bikes. Breaking from traditional urban planning that focuses on zoning for specific purposes, the new system takes living, social and public factors into account, enabling housing and job proximity.

In addition, it plans to put the smart city technology "sandbox" into work to expand the participation of start-ups and create qualitative jobs, based on new growth industries. Here, sandbox refers to a smart city-themed accelerator, focused on bringing innovative new products and systems to urban environments that improve the quality of life for residents.

To pursue the basic framework, the government will provide full support such as developing new technologies applicable to smart cities, improving unnecessary regulations, offering financial aid for research and development and promoting global cooperation.

Sejong City in South Korea will provide a variety of applications and services to enable residents to realize a happy, sustainable and environmentally friendly smart city. Seven innovative services promoted by the Sejong smart city can be summarized as follows.

- mobility
- healthcare
- education
- energy and environment
- governance
- culture and shopping
- jobs

*Busan Eco Delta City*

Busan Eco Delta City was designated as a national smart city model along with the Sejong 5-1 Life Zone. Co-developed by K-water, Busan City and the Busan Metropolitan Corporation, it is the first eco-friendly waterside complex city in South Korea to which water-specific smart technology will be applied and is scheduled to begin design and construction in the first half of 2019 through July 2021.

The 219-million-square-metre area in Busan, the country's second-largest city, will focus on global logistics under the theme of new future life centred on nature, people and technology. Busan smart city located near Gimhae International Airport has a budget of approximately $4.6 billion and will be constructed by 2022. Unlike Sejong City, Busan Eco Delta City will be promoted as:

- a smart tech city
- a smart water city
- a smart digital city

During Busan Eco Delta City's promotion as a smart city, seven core targets were set as follows.

- people-oriented smart city design
- a city made by its citizens
- part of the Living Lab network
- an R&D plug-in city
- introduction of the regulatory sandbox
- an open big data city
- providing a civic experience of innovative technology

## Case study: speech by President Moon Jae-in at Busan Smart City Innovative Strategy Presentation

(February 13, 2019)

**Fellow Koreans, citizens of Busan,**

I am very pleased that Busan is hosting a presentation today on innovative strategies for one of the government's top priorities: building a smart city. A smart city is the cradle of the Fourth Industrial Revolution. It is the look of a future city we have to forge anew. It is the place where our lives will become safer and more enriched.

Busan is the door to newness. South Korea was introduced to unknown civilizations from abroad through Busan, and South Korea's cultural inputs and products spread to the world through Busan. Today, Busan begins yet another chapter in history, one to be titled the smart city. Thinking about an imaginary future city emerging before our eyes already has my heart racing.

South Korea is the first country in the world to spawn a smart city and enact relevant legislation. In much the same way that life without the internet and smartphones has become unimaginable, smart cities will imminently transform our lifestyles …

After reviewing 39 candidate cities nationwide, the Special Committee on Smart Cities under the Presidential Committee on the Fourth Industrial Revolution finally chose Busan and Sejong City as the venues for the pilot smart cities in January last year. Instead of renovating or redeveloping existing cities, this ambitious plan goes back to the drawing board to create pilot smart cities that will be characterized by seamless application of Fourth Industrial Revolution technologies. Empty fields along the Nakdong River in Busan and hills in Sejong will be reborn as urban centres for a new civilization that are at the forefront of the era of the Fourth Industrial Revolution …

Multiple countries are engaging in fierce competition in the smart city field to take the lead in the era of the Fourth Industrial Revolution, but South Korea is the first to build a pilot complex at the national level. It is significant to secure the leading position in the global smart city market.

The goals and determination of the government are clear – to develop Busan and Sejong into the most advanced smart cities in the world. If the pilot cities in Busan and Sejong are successful, we will endeavour to enter the global market with a leading model that encompasses the entire process from urban conceptualization, planning and design to construction and operation …

If Busan and Sejong succeed as the world's best smart cities, South Korea can rise as a pace-setting economy. We will accomplish it without fail. For the

success of the smart city pilot complexes, I hope that the people, including Busan and Sejong citizens, will take great interest in and pool their strengths for the project.

Thank you.

(February 13, 2019, http://english1.president.go.kr/BriefingSpeeches/Speeches/119)

## Lessons learned: failure of the Presidential Committee on the Fourth Industrial Revolution

As discussed in Chapter 6, the Moon Jae-in administration, which was launched in May 2017, established the Presidential Committee on the Fourth Industrial Revolution (PCFIR) in August 2017 to cope with the arrival of the intelligent information society. The PCFIR deliberates upon and coordinates important policy matters pertaining to the development and acquisition of new science and technology, including artificial intelligence and data technology as well as new industries and services necessary for South Korean society's adaptation to the Fourth Industrial Revolution. The PCFIR has organized three subcommittees on regulatory innovation in government affairs. In addition, the PCFIR operates on two special subcommittees to ensure thorough discussions on various issues related to the Fourth Industrial Revolution, including smart cities and healthcare.

However, contrary to the initial plan, the organization's status and function declined in the process of organizing the committee, which resulted in the PCFIR not functioning properly. As a result, the PCFIR is not recognized as a successful organization.

In fact, the PCFIR chairperson concluded his term at the end of November 2019 and acknowledged the failure of the Committee's activities in an interview with the media on the status and performance of the Committee. In this process, the Chairperson acknowledged that although the PCFIR was a presidential body, it had no authority and responsibility and did not adequately respond to the confusion and issues arising from the introduction of AI technology in the South Korean economy and society.

Currently, as of the end of 2019, Uber and Airbnb are illegal and banned in South Korea. In addition, various ride-sharing services based on smartphones are also considered illegal. As such, in the face of the opposition of existing stakeholders on the creation and entry of new markets using ICT, the society is in a situation in which services cannot be provided properly. This is because the PCFIR did not properly remove regulations that were applied in traditional industries and services and prevented the creation of new markets by applying old regulations to new service areas. In this situation, the PCFIR failed to remove old regulations and create new services and markets.

In 2018, the PCFIR failed to demonstrate its ability to coordinate among stakeholders, especially to cope with conflicts among taxi drivers, taxi companies

and passengers regarding the introduction of taxi services based on smartphone apps in South Korea. This was because the PCFIR had no control over the interests of various existing ministries. The reasons for this are as follows.

The first is that the PCFIR organization is significantly lower in status and authority than other ICT committees. The PCFIR was launched as a presidential organization but did not have the authority and responsibility to coordinate the interests of various ministries. The organization itself was not based on statutes but was established by presidential decree and was temporary and unsustainable. Therefore, given that the term of the members was one year and the structure allowed them to serve only once, no long-term plans could be developed. Also, as the chairperson confessed, without being able to meet the president one-on-one for two years, ministries' officials did not recognize the organizational authority of the committee. This happened because the president had failed to empower the PCFIR through a delegation of authority or empowerment. Thus, it did not have the power to coordinate the interests of various ministries.

Second, the goal of the PCFIR organization was narrowly defined, limited to the introduction and use of ICT technology. Instead a whole-of-government organization for digital transformation or government innovation should have been launched, including the PCFIR's functions as a subordinate task. However, with the launch of PCFIR as a presidential organization, government innovation organized a separate committee and the e-government also formed a separate committee, which resulted in the establishment of multiple committees; because there was no collaboration between these committees, digital innovation and government innovation were separated by the use of digital technology.

Third, confusion arose in relation to the priority of national affairs. The Moon Jae-in administration announced job creation as the greatest national task. In the process, the status of the PCFIR declined. Currently, the PCFIR focuses only on deregulation to support the industries (i.e., revitalization of the ICT industry) regardless of government innovation. However, even this is not properly promoted by the opposition of the related ministries. As a result, the current initiatives of the intelligent and digital government implementation policies in South Korea have lost their driving force.

In this situation, therefore, the South Korean government should establish the following policy directives from the perspective of the leadership of the Fourth Industrial Revolution. President Moon Jae-in should present a clear vision of the Fourth Industrial Revolution including informatization and establish this vision as a presidential agenda. It would be desriable for the president's vision of the Fourth Industrial Revolution to include "the realization of a government trusted by administrative innovation using information technology" as the basic direction of all relevant policies. Furthermore, in response to the Fourth Industrial Revolution, the president must express willingness to regain public trust in the government by using intelligent e-government to fight corruption in the public sector.

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# 13 Policies against the threats to digital government

## Introduction

The main success factors of digital government implementation, as we saw in the previous chapter, present a very important policy direction to consider when pursuing digital transformation in any country. However, the policy area that should be emphasized more than these success factors is coping with the dysfunctions of digital government transformation. In implementing digital transformation, what is more important than emphasizing the success factors is securing trust in the government. In other words, no matter how well the government implements the digital government transformation policy, it can't succeed if the people disbelieve it – that is, if they do not trust the administration service provided through the government virtual space.

In recent years, however, governments in many countries have started to use big data, cloud computing or AI technologies to manage and share their citizens' personal information, which leads to the possibility of an electronic surveillance society. This can cause more serious problems in authoritarian developing countries, especially when an administrative service using biometrics such as face and iris recognition and fingerprints is implemented, whereby this possibility becomes even greater. Furthermore, the accumulation and utilization of such personal information can ultimately lead to privacy violations.

Recently, the security and safety issues of cyberspace have also reached a serious level. If cyberspace safety measures are insufficient, none of the services of digital government can be properly provided under the current cyberspace structure. Finally, in order to achieve sustainable digital innovation, we must pursue policies that achieve digital inclusion beyond the longstanding digital divide. Therefore, the countermeasures for dysfunctional implementation of digital government will be discussed in this chapter and can be summarized by the following chapter headings.

- responding to the electronic surveillance government
- establishing safety measures against cyber crime
- responding to privacy invasion: the importance of digital privacy
- digital inclusion beyond the digital divide

## Responding to the electronic surveillance government

The world has now entered the era of the smart intelligent information society along with the development of advanced ICT. These smart information societies evolved from global networks considered in the past to form the "Information Village", whereby the world was connected in real time and its complexity was further increased. Therefore, with the development of ICT, the breadth, speed and interdependence of the changes have increased, along with the risk factors of society. Furthermore, in the smart intelligent information society, there is a possibility that social dysfunction such as personal information protection issues and risks of the electronic surveillance society may be highlighted.

In particular, there is a possibility that the extent of infringement of personal information by corporations as well as the surveillance of individuals by the state may increase rapidly, considering the recent information gathering behaviour of large multinational corporations such as Google, Apple and Facebook. In this way, if personal surveillance by corporations and state powers is accelerated by the rapid development and convergence of information technology in the smart information society, ultimately we will all face a crisis of distrust.

In fact, we live in a world where intelligent information technology is developing rapidly, in particular facial recognition and big data analysis technology, allowing instant verification of personal information anytime and anywhere. Thus, when governments in many countries utilize this technology, the possible emergence of electronic surveillance governments is not far-fetched. Therefore, a plan should be prepared for properly using such intelligent information technologies.

### *The emergence of the intelligent information society and electronic surveillance government*

Today's world is rapidly changing from the existing information society to the intelligent information society by utilizing smart intelligent information technology. In this intelligent information society, there will be many revolutionary changes that the world has never experienced. These intelligent information technologies are becoming more sophisticated and are working as a driving force of social change through the process of convergence with each other. Therefore, existing e-governments and digital governments in the intelligent information society have the possibility to change into electronic surveillance governments.

The debate over the electronic surveillance society has a long history (Lyon, 1994; Garfinkel, 2000). But now, smart information technology has changed it. With smart intelligence in the information society, all work processes are processed in digital form in virtual space and leave audit trails. Therefore, in the smart intelligent information society, it is highly likely that electronic surveillance using the intelligent information described above becomes a general practice. The arrival of the intelligent information society by the information technology revolution inevitably predicts a new level of social monitoring and control. The

information processing technology of digital artificial intelligence is accompanied by an increase in surveillance ability in various ways.

Specifically, from the technical perspective, surveillance technologies such as information communication technology, biometrics technology, biotechnology and remote surveillance technology have developed remarkably. With the development of information processing technology including big data, the cost, speed and accuracy of storage have been greatly improved. These advances in information technology have allowed nearly unlimited information gathering, processing and storage while maintaining high accuracy at low cost. As a result, the amount and quality of information collected, processed and stored has increased to become greater than that of ten years ago. Today, the trend of increase is explosive, as we are entering the era of intelligent information based on big data.

China is building a massive digital security system using surveillance cameras, artificial intelligence and big data under the name of "Sharp Eyes", aiming to achieve perfect public safety. The project is aimed at completion by 2020. It is also establishing a network that monitors crime scenes in real time by connecting surveillance cameras to the televisions in each home or the smartphones of residents. Recently, drones have also been added to the system. Accordingly, many police forces are already using facial recognition systems to arrest criminals or to find missing persons.[1] Therefore, we are approaching an electronic surveillance society using various technologies such as artificial intelligence.

### *Policy advice for electronic surveillance*

In order to respond to new electronic surveillance in the intelligent information society, a change of perception that is different from that of the past is required. This starts with the importance of "information human rights" and strengthening information privacy (Chung, 2018).

#### *Information human rights in the intelligent information society*

Human rights are the fundamental and irreversible fundamental rights that an individual enjoys as a human being so that human dignity can be respected and realized. The state is obligated to ensure and guarantee such human rights. The constitution of South Korea has the obligation to confirm and guarantee the non-inviolable human rights of individuals, collectively referred to in the document as "information and communication technology and human rights". On May 26, 2005, the Constitutional Court ruled that there was a need to constitutionally approve the right to self-determination of personal information as a new fundamental right.

The National Human Rights Commission defines information human rights as follows. "Information and communication technologies (ICTs) and human rights" refers to the process of collecting, processing, distributing and utilizing digitized information by information and communication technology, and the

resulting information value, to undermine human dignity. Basic rights can be used freely and without discrimination.

In order to protect personal information from the risks inherent in the development of modern information and communication technology, ultimately, individual decisions must be protected from being influenced by AI algorithms. Under these backgrounds a minimum constitutional safeguard necessary to prevent the possibility of total damage to the foundation of the constitution.

### *Strengthening information privacy*

Information privacy (or data privacy) is the right of an information entity to control information about himself/herself that may affect privacy. Since privacy violation is achieved by collecting, using, providing and distributing personal information, the information privacy rights issue ultimately results in the collection, use and control of personal information. In this sense, information privacy is different from the traditional sense of privacy, which emphasizes the freedom of the individual's private life, i.e., the exclusion of interference with the body, space and decision making.

The contents of the right to the self-control of personal information that constitutes the core of information privacy rights are as follows: the right to collect and use personal information, the right of withdrawal of consent, the right of correction and deletion and the confirmation of processing of personal information. In addition, legislation in many countries emphasizes the anonymity of personal information processing. However, since anonymity is generally recommended, it has not yet developed into the rights of information entities.

As the intelligent information society becomes more and more sophisticated, much of its life will depend on smartphones and information and communication technologies. Even though it is not visible, the influence of information surveillance by governments and corporations is increasing.

Especially, the uncontrolled government's power of surveillance is likely to lead to abuse of power based on use of the collected information and to human rights violations such as social discrimination and disadvantage. Therefore, in order to pre-emptively respond to the dysfunctions that may arise in the intelligent information society, it is necessary to further raise awareness of the risks in civil society to protect information human rights.

## Establishing safety measures against cyber crime

Although the development of ICT has improved the convenience of our lives and brought various functions for the development of digital government, the possibility of the occurrence of information dysfunction such as cyber attacks and information leakage has increased in proportion. Cyber attacks on digital governments can pose a direct threat to our lives, which is not limited to individuals and corporations but extends to attacks that can affect the entire nation. The ICT dependency of core government functions such as energy and water

resources, transportation, medical care, finance, communication and major infrastructure that plays an important role in the nation and society is increasing. Therefore, cyber crime targeting these major infrastructures in our countries directly affects our lives and even threatens national security.

Recently, as the age of the internet of things (IoT), the cloud and artificial intelligence has dawned, the question of information protection that was once centred around existing information and communication devices is now expanding to all things around us. The extent of potential damage resulting from cyber attacks will also increase and will be seen not only as existing information leakage or financial damage but also as a physical threat to a user's life or body. In the case of big data, information leakage and personal information infringement that may occur during the processing of large amounts of data may more severe than in size and degree of damage.

Since it is impossible to pursue the development and evolution of digital government without consideration of the security of cyberspace, the importance of information protection is increasing day by day. Furthermore, in line with the introduction and diffusion of new intelligent information technology, the paradigm of information protection requires constant change. Therefore, the security and safety of information systems form one of the new growth engines important for national development. Therefore, the government should continue to make efforts to strengthen information security in the digital government and prepare for cyber threats.

### *Digital government cyber threat status*

Cyber threats to the digital government can be defined as attacks that target vulnerable parts such as information systems, which are core elements of the e-government, and lead to accidents such as leakage, forgery and alteration of various information or shutdown and destruction of the system. Threats to the digital government were initially confined to computer crime such as intrusion into the government network and data destruction. Recently, however, various ethical problems have been combined and expanded to a wide range of cyber crimes.

Cyber crime is defined as a crime that occurs in the context of accessing internet space (cyberspace) using a computer or in the process of using information acquired in connection. This means, for example, that access to personal information that is to be protected is restricted or blocked to unauthorized parties, who might harm or damage the personality or reputation of a person by exploiting the anonymity and proliferation of the internet in an attack. Cyber terrorism is an illegal act targeted at the information network itself. It is an act of attacking the computer system and the information communication network by using electronic infringement techniques such as hacking, computer viruses, worms or spam mail.

The information communication infrastructures of the government are the major facilities of the digital government that are vulnerable to attacks

and the size of potential damage is also increasing due to the combination of distributed denial of service (DDoS) attacks, homepage tampering and system destruction. In particular, in 2016, a hacking accident occurred in the central bank of Bangladesh. The incident caught worldwide attention as the hacker organization used malicious codes to snatch $81 million from the Society for Worldwide Interbank Financial Telecommunication (SWIFT), which provides global financial transaction information between banks and other financial institutions. Even after this incident, hacking attempts and DDoS attacks against government agencies and financial institutions have continuously been made.

In recent years, there has been a rapid increase in the hacking of the cryptocurrency exchange centred on Bitcoin. In South Korea and Japan, various kinds of accidents such as bankruptcy and information leakage caused by the hacking of the virtual currency exchange have continuously occurred and virtual currency has emerged as a new revenue model for intelligent cyber crime, in combination with Ransomware, mining-type malicious codes etc.

Recently, cyber war is drawing attention alongside cyber crime. Several countries around the world are implementing policies that attempt to breed hackers and neutralize the information systems of their counterparts. Hacking in Russia, Eastern European countries, North Korea and China has already become a national organization and is known to be large in scale. Therefore, it is necessary to respond to this trend at the national level.

### *Response policies for cyber threats*

In the future, cyber threats to the digital government will become more technologically sophisticated and advanced and the methods will be diversified and covert. The damage is not limited to simple network failures but it is highly likely to lead to the leakage of important data of national institutions and personal information. In response to this possibility, the South Korean government has been pursuing various policies for a long time. First, it investigated the actual state of security of e-government services provided by each administrative agency to provide convenient and safe e-government services to citizens and established measures to improve the security through system improvement and infrastructure expansion.

In order to prevent the national and social damage caused by the infringement of information systems and information communication networks (e.g., hacking, viruses and DDoS attacks), information deception and counterfeiting or alteration, the government has enforced prohibitions and penalties that apply to such violations.

As the e-government service has become more popular, it has become more important than ever to implement a reliable e-government citizen service in response to a wide range of cyber threats so that the entire nation can live in a safe cyber environment. Therefore, the government is conducting surveys on the actual level of security level of the e-government's public services every year and

is using the security index to measure and manage security threats of institutions that provide e-government's public services.

## South Korea's cyber security response status

The Moon Jae-in administration in South Korea announced the "Five-Year Plan of State Administration" in July 2017 and presented the national government's agenda of strengthening cyber security response capabilities in response to cyber threats. Specifically, it will strengthen the national cyber security system by strengthening the cyber security control tower at the National Security Centre, establishing a systematic cyber security implementation system and developing the cyber security system. In August 2018, the intelligence integration secretary and the cyber security secretary were integrated into the cyber information secretary in the presidential office.

The National Security Council (in the presidential office) announced the National Security Strategy in December 2018 to establish the cyber security system for civil, public and military cooperation and strengthen the role of the National Security Council as a control tower to strengthen the cyber security threat response capability. To this end, the National Cyber Security Strategy was established to propose medium- and long-term policy directions for cyber security while continuing to improve laws and systems so that civilian and military forces can cooperate effectively, strengthen cyber threat prevention and response capabilities, strengthen infrastructure capabilities and promote international cooperation.

## Responding to privacy invasion: the importance of digital privacy

One of the most important aspects of digital government policy today is privacy. As projects related to digital government become more sophisticated, the government is forced to increase the collection of citizens' personal information. In particular, an intelligent information society using big data and IoT will increasingly utilize citizens' personal information to provide personalized service.

Recently, the rapid development of various ICTs, including the use of smartphones and social networks, has brought a world completely different from the past in the process of promoting the digital government. In the past industrial and information society, the concept of privacy was "the right to be let alone". This definition of privacy was established by Warren and Brandeis in 1890 as "the more general right of the individual to be let alone", a definition which lasted for more than 100 years.

However, this concept of privacy has come to be protected relatively recently. Since the world's first data protection law was enacted in Sweden in 1973, several laws concerning privacy have been enacted competitively in various countries. In 1974, the United States enacted the Privacy Act in 1974 and France enacted the French Data Protection Act in 1978. South Korea enacted the Act on the

Protection of Personal Information Maintained by Public Institutions in 1994, followed by a comprehensive Personal Information Protection Act in 2011 that included the private sector. The latest privacy laws of each country have been more active than the earlier laws. This is because the rapid development of intelligent information technology has made it virtually impossible for individuals to be let alone.

### *Change in the concept of privacy*

The concept of privacy in the intelligent information society is completely different from that of the past. This is to counter the rapidly developing intelligent information technology. Therefore, today's concept of privacy is evolving in response to intelligent information technology through the following three steps.

#### *The classical privacy concept: the right to be let alone*

In the past, where privacy violations were primarily a matter of personal privacy, the methods to protect privacy were very simple.

- prohibition of theft: prohibition of commercial use without prior consent such as name or photograph
- no intrusion: no intrusion into residential areas, no eavesdropping on conversations and communications, no shots without consent
- the prohibition of publicity activities that give the public a false impression of the individual
- the prohibition of publication of embarrassing personal affairs

These contents can be called the first-generation privacy rights of the past.

#### *Modern additional privacy concepts: the control of my personal data*

The right to self-determination of personal information, which can be regarded as the second-generation privacy right, was a right established at a time when collecting and integrating personal information was activated as national activities or transactions became more active. The second-generation privacy right is embodied in the eight principles of the OECD Privacy Protection Act of 1980.

Until the early 2000s, the South Korean government had many difficulties in e-government projects due to privacy issues related to personal information. South Korea built an administrative information sharing system in the mid-2000s and implemented the system by adding the right of self-information control as part of this privacy right. Later, in 2011, the South Korean government stipulated the right to control self-information in the Personal Information Protection Act.

*An emerging concept of privacy: anti-surveillance rights*

In a situation where the government collects, holds and uses information about individuals to promote digital governance, it will be virtually impossible to control personal information. With the progress of digitalization, personal information once secured can be infinitely copied and individuals can not actively control personal information generated during SNS activities. With the development of information technology, it has become impossible to have proper control over personal information by simply controlling the process of collecting and generating personal information.

Today, with the rapid development of surveillance technology, countries and corporations can collect and manage systematic information about individuals on a large scale and at a very low cost. Furthermore, countries and corporations are able to analyse and monitor all activities and thoughts as well as individual locations. Even biometrics such as genes can be used to analyse not only the present but also the past and future.

Therefore, the issue of surveillance raises the problems of a new phase that can not be solved by the right of self-determination of personal information and privacy rights. In order to cope with the problems caused by such surveillance today, an "anti-surveillance rights", which can be called the third-generation privacy right, should be established. An anti-surveillance right is the right to respond to grave threats to democracy and human rights and to control all activities that limit the freedom of thought and behaviour of individuals and groups beyond individual privacy or personal information. Any action, plan or system that controls thought or activity, regardless of whether the group or individual is identified, should be viewed as a monitoring activity and appropriate protection should be provided accordingly.

***Converting the concept to digital privacy***

"Digital privacy" is becoming more important because of the various ICT technologies used in the intelligent information society. In other words, the contents of privacy are changing due to the rapid infringement of personal life through the utilization of technology different from the past. In particular, the importance of personal information that can identify an individual in the virtual space is increasingly emphasized. Until recently, it was important to prevent the leakage of personal information in relation to privacy. However, now, in order to utilize various social network services (SNS), more personal information should be disclosed and utilized. Especially in the hyperlinked society where the internet and the artificial intelligence are combined, there is a conflict with the privacy issue because these technologies favour the openness of the information according to the social connection and the autonomy of the individual.

Therefore, a new digital privacy standard should be applied to the generations that disclose all of these things. In such an intelligent information society environment, individuals will actively determine their disclosure level by distinguishing

their personal information between the increase of personal information utilization and the possibility of personal privacy invasion.

### *South Korea's response to privacy issues*

The current response level to privacy issues in South Korea goes beyond the stage of "control of my personal data" and is aimed at the anti-surveillance right. Over the past two decades, the South Korean government has addressed privacy issues that have arisen in the process of implementing digital government and has stipulated protection of information owners' rights and privacy issues in the Personal Information Protection Act and e-Government Act.

Therefore, the South Korean people, who are the owners of personal information, have rights and can request the examination, correction, deletion and process termination of their personal information. In addition, when an information entity's rights or interests of personal information are violated and requests the abovementioned rights, public organizations should notify the entity of the result of handling the infringement.

Furthermore, those who operate personal information files for business purposes, such as general business operators, associations, organizations and public institutions, should establish procedures or take measures to secure and protect the rights of information entities.

In addition, the Personal Information Protection Act has stipulated the Personal Information Dispute Mediation Committee, whereby a personal information infringement call centre should be installed and operated in order to deal with grievances and provide counselling for damage caused by infringement of personal information of the public. Accordingly, the Personal Information Infringement Call Centre handles procedures such as guidance, counselling, notification of infringement methods and application for responding to complaints of personal information infringement and remedies.

### *Establishment of the EU General Data Protection Regulation*

The EU General Data Protection Regulation (GDPR) is the most important change in data privacy regulation in the past 20 years. The GDPR was approved and adopted by the EU Parliament in April 2016. The regulation took effect after a two-year transition period and, unlike a Directive, did not require any legislation to be passed by the governments. It came into effect on May 25, 2018.

The GDPR responded to environmental changes caused by the spread of new technologies such as artificial intelligence (AI), the internet of things (IoT) and big data and the surge in the distribution of personal information across borders. The goal is to create a Digital Single Market based on the safe and free transfer of personal information within the European Union.

The GDPR expanded the rights of information entities and strengthened corporate accountability to ensure this. The rights of newly added and enhanced information entities include the right to erasure, the compliance of processing

activities and automated decision making, including profiling. In the corporate responsibility section information concerning the Data Protection Officer (DPO), Personal Information Impact Assessments, data protection by design and by default, records of processing activities and the notification of infringement accidents was added.

### *The right to be forgotten and the right to erasure*

It is "the right to erasure" that emerged as the most important issue in the GDPR. This was a step forward from the previously established right to be forgotten.

Digital privacy, as we have already seen, includes the right to be forgotten and the right to erasure. The right to be forgotten was first proposed in the EU and became a global concern after the European Court of Justice ruling in May 2014. Currently, there is an ongoing discussion of the right to be forgotten as one of the countermeasures against various personal information leakage in the proliferation of the intelligent information society. In the digital environment, where information sharing is a widespread practice, various constitutional issues are being raised on the institutional merits of ensuring the right to remove individuals' personal information and prevent them from being searched online.

In order to strengthen privacy in the intelligent information society, it is necessary to understand the "right to be forgotten" from the viewpoint of new fundamental rights. As the information privacy rights or personal information self-determination rights that have been developed so far are potentially insufficient to completely cover all types of personal information protection, just as the "right to be alone" was suggested in the nineteenth century, a new type of privacy right is needed today, as has been implemented in many countries around the world.

Also known as the right to data erasure, the right to be forgotten entitles the data subject the right to request the data controller to erase his/her personal data, cease further dissemination of the data and potentially have third parties halt processing of the data. The conditions for erasure, as outlined in Article 17 of the GDPR, include the data no longer being relevant to original purposes for processing or that a data subject has withdrawn consent. It should also be noted that this right requires controllers to compare the subjects' rights to "the public interest in the availability of the data" when considering such requests.

The opening text of Article 17 (the right to erasure/the right to be forgotten) in the GDPR is as follows.

> The data subject shall have the right to obtain from the controller the erasure of personal data concerning him or her without undue delay and the controller shall have the obligation to erase personal data without undue delay where one of the following grounds applies.

### *South Korea's response to issues arising from the right to be forgotten and the right to request deletion*

In response to this trend, the South Korean government also amended the relevant regulations and laws in 2016 to institutionalize the "right to erasure". First, the Act on the Promotion of Information and Communications Network Utilization and Information Protection, etc. was amended. Specifically, a victim of a personal information leak can request the information and communications service provider to remove the information or publish a rebuttable statement.

Based on this, in May 2016, the Korea Communications Commission (KCC) announced that citizens will be able to request search engines and website administrators to restrict their own postings from being publicly accessible. The KCC released the "Guidelines on the Right to Request Access Restrictions on Personal Internet Postings" that took effect in June 2016 but not applied to third-party content.

## *The right to explanation: the regulation of algorithms*

The rights of information entities in the newly established GDPR have also been combined with technical development environments such as artificial intelligence to form various new discussions. For example, in the case of automated decision making, such as artificial intelligence profiling, an information subject has the right to request an explanation of the algorithm used to make such a decision and to exercise objection. Some of the recent discussions in South Korea have concerned strengthening the rights of information subjects on these algorithms.

The rights of the digital privacy perspective discussed above are now evolving into the right to demand explanations in the intelligent information society. Recently, as artificial intelligence technology and services have become widely available, the production and distribution of information by artificial intelligence algorithms and not by people has been made possible. However, in response to the advantages of the artificial intelligence industry, discussions are actively taking place to standardize "algorithmic accountability" or "algorithm transparency" as a normative response to technological and social adverse effects or dysfunctions of artificial intelligence technology (Lee, 2016).

The starting point of such a discussion is that artificial intelligence algorithms are not fair and neutral but that the selection of specific algorithms or algorithm-based decision making results in discriminatory and exclusionary results (Woolf, 2016). For example, as has been the case in recent US presidential elections, there are concerns that Google and Facebook's recommendation and search algorithms may lead to political bias; the Obama administration had warned that a widely commercialized big data analysis algorithm might cause social prejudice and distortion, especially gender discrimination and racism (Executive Office of the President, 2016).

Therefore, since algorithms are constituted by human judgement or selection, they necessarily contain bias and differentiation. Therefore, it is naturally necessary to regulate the algorithm design, development and utilization process. A full discussion of algorithmic regulation has recently been published by the European Union (European Commission, 2020).

The GDPR has to deal with "algorithmic transparency", including "right to explanation" for automated personal decisions such as profiling. Social monitoring and the regulation of algorithms are becoming more and more important in the "public domain" rather than the "machine domain", which simply operates automatically.

## Digital inclusion beyond the digital divide

The digital divide is a gap in the access and utilization of information that results from being located at the bottom of economic, educational and age indicators. The digital divide is an area of great interest in many countries as current harsh conditions lead to isolation and reduced opportunities to access and utilize digital technology, thereby further expanding the value gap. In this way, problems related to the digital divide in all the countries of the world have become the most important issue to have been continuously raised since the beginning of the information society (Loader, 1998). However, due to the rapid development of the smart intelligent information society in recent years, the digital divide is now in a new phase. More than a decade ago, the OECD and Northern European countries were pushing digital inclusion policies beyond the digital divide.

In the case of South Korea, the country has experienced a serious digital divide phenomenon as a result of government-promoted rapid national social informatization, information technology and industrial development over the past 20 years. Therefore, the South Korean government has recognized these problems and has been pursuing policies to improve the information capacity and utilization level of vulnerable groups based on information accessibility.

### *The concept of the digital divide*

The digital divide refers to the gap between those who do and those who do not have access to new information technologies such as computers and the internet (Van Dijk, 2005). The concept of the digital divide is defined slightly differently between academics and institutions. According to the OECD, in the past, the digital divide was defined as:

> The gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities.
>
> (OECD, 2001)

According to South Korea's Framework Act on National Informatization, the digital divide is defined as follows.

> The term "digital divide" means a situation in which the imbalance in opportunities to access or use information and communication services is created due to social, economic, regional or physical circumstances.

The definition of the digital divide is now turning into digital inclusion in the smart age through discussions on how smart technology development and the supply of new services will affect information capacity and the information divide.

### *The current status of South Korea's digital divide*

Since 2002, the South Korean government has conducted surveys on the effects of the digital divide on the underprivileged (disabled, low-income, elderly, farmers and fishermen). For this purpose, the digital divide index was developed and first utilized in 2003. In response to the intelligent information society in 2016, the new digital divide index was created to replace the previous digital divide index and has since been used for investigations. The current status of the recently investigated digital divide can be summarized as follows.

The National Information Society Agency (NIA) conducted the "New Digital Divide Status Survey" in 2018 (NIA, 2018). This survey measures the level of access, capability and utilization of digital information through technology such as PCs, mobiles, wireless information communication devices and the internet within information-vulnerable groups; the survey was conducted among 15,000 people across the country using a one-to-one interview method.

According to the survey results, the level of digital informatization of the four most vulnerable groups (persons with disabilities, low-income families, farmers and elderly people) increased by 3.8 per centage points from 65.1 perc ent in 2017 to 68.9 per cent in 2018. Each level of digital informatization of the four groups uses relative measures that are compared to the general public, whose level of digital informatization is recorded is given a full score of 100.

When analysing by sector, the level of access to digital information is 91.1 per cent, the use of digital informatization is 68.9 per cent and the competence of digital informatization is 59.1 per cent; the sectors with the largest increase in the level were in the order of competence (7.2 per cent increase), usage (2.4 per cent increase) and accessibility (0.1 per cent increase). For the first time in this survey, the access level of the vulnerable groups exceeded 90 per cent of the general public. By social class, the elderly had the lowest level of digital informatization (63.1 per cent), followed by low-income earners (86.8 per cent), disabled people (74.6 per cent) and farmers (69.8 per cent).

### *South Korea's policy to bridge the digital divide*

In South Korea, at the Fourth Informatization Strategic Conference held in April 2000, nine ministries including the Ministry of Finance and Economy and the

Ministry of Information and Communication jointly organized the "Building a Knowledge-Sharing Super-Power Country: A Society without A Digital Divide". In the announcement, eliminating the digital divide emerged as the major policy in South Korea.

Since then, the South Korean government has enacted the Act on the Elimination of the Digital Divide (2001) as a legal device to ensure information-vulnerable groups' free access to and utilization of information and communication networks. To support the policy, the first comprehensive digital divide elimination plan (2001–2005) was established.

Subsequently, in 2009, the Act on the Elimination of the Digital Divide was abolished and the newly enacted Framework Act on National Informatization encompassed the dissolution of the digital divide. The following Articles are related to the digital divide in the Framework Act on National Informatization.

- Article 31 (establishment of polices for narrowing the digital divide)
- Article 32 (guaranteeing access to and use of information by persons with disabilities, aged persons etc.)
- Article 33 (development of technology related to the narrowing of the digital divide and support for its distribution)
- Article 34 (support of information communications products)

### *The status of digital divide policy in South Korea*

In order to resolve the digital divide, the South Korean government has pursued various policies to improve the informatization level of vulnerable groups relative to the entire nation. The specific policies are summarized below.

The policy to solve the digital divide is composed of development and dissemination of information and communication auxiliary equipment, information accessibility improvement projects and information education projects to persons with disabilities.

In order to strengthen the information access right of the underprivileged, it is necessary to establish infrastructure to improve the information accessibility of visually impaired persons for online information and printed publications, gradually expand the institutions for web accessibility survey and introduce web accessibility certification and a web accessibility quality mark.

In addition, in order to improve the use of information in vulnerable regions, the government is striving to expand and improve information access facilities such as the Internet Centre for Disabled Persons and to establish information technology innovation clusters. In order to expand opportunities for information access by vulnerable groups, the government is also providing information and communication assistive devices, PCs and broadcasting receivers.

### *The status of universal service policy in South Korea*

The transition to the smart intelligent information society carries the possibility that the transition promotes the relative worsening of poverty among low-income

people through unemployment and welfare reduction. Therefore, the government should pursue policies that realize the principle of a "universal information service" that allows everybody to obtain information whenever and wherever they want.

A universal information service has been implemented systematically and through law as an ideology of information and communication policy that all citizens should be able to use information and communication services easily regardless of region, income and computer literacy.

In general, factors that cause information inequality can be found in the following five areas and the provision of universal service is also sought in the same area. First, is the communication network built so that information can be accessed and used anywhere? Second, is information and communication equipment and Software (S/W) developed to suit the individual's physical and mental ability? Third, is it cheap enough for everyone to buy information and communication products and to pay for telecommunication services and communication fees? Fourth, is it possible to receive education necessary for using information and communication equipment, software and information and communication services? Finally, is there a variety of information and communication services provided to satisfy individual needs and improve quality of life?

The current universal service in the digital government policy of South Korea is in a dire situation. In particular, e-government services for people with disabilities do not have the basis for proper delivery. Since April 11, 2009, the Anti-Discrimination Act for Disabled Persons has been enforced in South Korea, requiring mandatory web accessibility for the disabled. However, the internet usage rate of people with disabilities was only 70.6 per cent as of 2016. Also, there is no support for information communication equipment and software for the disabled. Therefore, it is very important to educate more people by utilizing various institutions.[2]

## Case study: the UK government's Digital Inclusion Strategy

Digital inclusion, or rather, reducing digital exclusion, is about making sure that people have the capability to use the internet to do things that benefit them day to day – whether they be individuals, SMEs or VCSE organisations.

Digital inclusion is often defined in terms of:

- Digital skills – being able to use computers and the internet. This is important, but a lack of digital skills is not necessarily the only, or the biggest, barrier people face.
- Connectivity – and access to the internet. People need the right infrastructure but that is only the start.
- Accessibility – services should be designed to meet all users' needs, including those dependent on assistive technology to access digital

services. Accessibility is a barrier for many people, but digital inclusion is broader.

Each of these definitions addresses a single specific barrier that some, but not all, people and organisations face. There is seldom just one reason why people are digitally excluded, and there is no single approach to solving it.

Digital inclusion is about overcoming all of these challenges, not just one. Equally, with so many challenges, government cannot address digital exclusion alone.

The 10 actions will be delivered over the next 2 years. At that time, we will assess what we have achieved and review our approach based on what has worked.

Action 1. Make digital inclusion part of wider government policy, programmes and digital services
Action 2. Establish a quality cross-government digital capability programme
Action 3. Give all civil servants the digital capabilities to use and improve government services
Action 4. Agree a common definition of digital skills and capabilities
Action 5. Boost Go ON UK's partnership programme across the country
Action 6. Improve and extend partnership working
Action 7. Create a shared language for digital inclusion
Action 8. Bring digital capability support into one place
Action 9. Deliver a digital inclusion programme to support SMEs and VCSEs
Action 10. Use data to measure performance and improve what we do

(Government Digital Service, 2014)

## Lessons learned: the necessity of a response to the problems of intelligent CCTV

Closed-circuit television (CCTV) refers to a system that transmits video information captured by a camera installed in a specific space only to a specific receiver through a closed wired or wireless transmission line. CCTV installations are classified into crime prevention, traffic information collection, speeding and parking control, facility management, garbage dumping, disaster and firefighting management, airport and port management, and train and subway management functions.

Today, facial recognition and artificial intelligence technology are evolving into intelligent CCTV by integrating with existing CCTV. Such intelligent CCTV consists of a system that detects an object as an image, analyses a situation and sends an alarm to a monitor. Simply put, IoT technology is integrated into CCTV for the purpose of crime prevention and damage prevention beyond the existing record-type CCTV. Intelligent CCTV analyses face detection/recognition

information and vehicle number recognition information to send signal before an event occurs and notify the control centre.

This intelligent surveillance system refers to a system that (1) collects video information, (2) automatically detects a specific object or activity and (3) informs the user when needed. The need for social safety nets that focus on prevention and an immediate response to violent crimes and disasters is increasing and intelligent surveillance systems are rapidly being introduced as more video information can be analysed with expanding surveillance systems such as CCTV.

We have arrived at an era in which smart cities control the flashing cycle of traffic lights by checking the identity and age of people crossing the crosswalk. Intelligent CCTV is different from the existing CCTV systems and non-human computer monitors based on databases and algorithms of the monitored object conduct surveillance. Big data and AI technology make automated CCTV operations more efficient. Digitized images are not only effective for storage but also lay the basis for automatic analysis and alerting by algorithms. Unlike analogue images that humans have to check and analyse with their own eyes, digital images can be automated and precisely analysed through algorithms that use biometric and motion information. In addition, the analysed information is accumulated to reinforce the database, allowing for more accurate analysis and action in the future.

Since September 2011, the South Korean government has installed CCTV only when it is necessary for crime prevention, traffic control and facility safety, and only if the law specifically permits the installation of CCTV indiscriminately under the Personal Information Protection Act. When planning to operate an image information processing device in a public place, public institutions should collect opinions from related experts and interested parties before installation and prepare information boards on the installation and operation of the image information processing device so that the information subjects can easily check image operations.

However, now, these laws and regulations alone are not enough to deal with the introduction and use of intelligent CCTV. This means that the possibility of privacy invasion in the digital government environment is very high. Therefore, there is a need for stronger privacy protection measures in the future for these new technologies, including for intelligent CCTV.

## Notes

1 In this regard, since 2017, the Chinese government has photographed the faces of people crossing the streets with CCTV in major Chinese cities such as Shanghai and Shenzhen, and then identified them through facial recognition software. The personal information secured in this way is displayed on an electric signboard along with face photos and videos to inform the user of the illegality.

2 In relation to this, in the past, South Korea has used the post office to resolve the digital divide. Using post offices branches spread regionally, they also rented free internet

terminals and conducted training. In the United States, as part of the Digital Inclusion Policy, community libraries provide computer-based training for local residents. (Source: https://digitalinclusion.umd.edu/content/what-digital-inclusion.)

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# 14 A strategy for digital governance

## Introduction

In 1997, the author participated as an expert in creating South Korea's first e-government vision and strategy. At this time, the introduction of ICT into the administration aimed at improving the productivity of administrative work so it was relatively easy to establish the vision and strategy. The reason was that, considering the level of information technology in South Korea at the time, it was mostly about benchmarking the status of developed countries such as the United States and the United Kingdom and establishing a strategy suitable for South Korea. But now, more than two decades later, the situation has completely changed. Today, when setting up a vision and strategy for digital government implementation, the factors that need to be considered have changed immensely from those of the past.

Now, due to the rapid development of smart intelligent information technology, various ICT application tasks are emerging. As for citizens, they are now playing the roles of direct producer and consumer of information at the same time, beyond the user level of information systems. Therefore, citizen participation is becoming a more important factor in the promotion of digital government policy. The implementation of digital government through digital transformation now calls for a new paradigm that is completely different from that of the past.

South Korea has now become a leading country in the implementation of digital governance, faced with a situation where it is not benchmarking digital policies of other countries but is pushing ahead with new policies. Therefore, South Korea is now drawing worldwide interest and attention in its establishment of digital government policy. Therefore, in this chapter, I would like to elaborate the lessons of the digital government promotion strategy, focusing on the cases that South Korea has experienced during the process of implementing digital government over the past 20 years. The new success factors of this digital government strategy can be summarized by the following chapter headings:

- establishing clear vision and strategy: building trust in digital government
- the president's leadership and a strong promotion system: blocking political opposition

- governance design for government innovation through the use of ICT: combining ICT and government innovation
- digital government reform consensus through citizen participation: digital governance

## Establishing clear vision and strategy: building trust with digital government

When promoting digital government projects to national agendas or presidential agendas, the most important point is to establish a vision and strategy for digital government implementation. It is important for the president to set a national agenda at the beginning of his presidency, presenting a clear vision of the digital government including overall information technology. Within this vision, it is desirable to incorporate the concept of a "government of communication and trust that utilizes information technology" in the basic direction of the policy.

In other words, it is necessary to clarify that e-government is a key means of promoting participatory democracy and enhancing government transparency, in addition to merely increasing the productivity and efficiency of the government and allowing the people to receive government services conveniently. In addition, through e-government, the government should first express its willingness to rid the corruption of the public sector and seek public confidence in the government.

In addition to presenting these visions, concrete strategies should include a list of key e-government projects, specific performance goals and target years and implementation principles.

Finally, it is necessary to construct a strong promotion system and to delegate the whole power of e-government implementation and continue support throughout the administration. This process will ensure the continuity of projects for digital government implementation. It is very important to secure projects' continuity because projects for digital government implementation are invisible and many ministries and ICT convergence are needed to collaborate these days. Therefore, in order to implement digital government, it is most important to establish clear vision, goals and strategies.

### *The age of excessive visions and strategies*

Today, governments around the world are setting up and publishing too many visions and strategies related to the promotion of digital government. Numerous consulting companies are also involved in this situation. Therefore, it can be defined as the age of excess of vision and strategy.

South Korea is no exception. In response to the new era, several ministries have established new strategies and are constantly presenting them. Therefore, duplication and overlapping policies is a serious issue in each department within the country, and even within the departments themselves. This is because the ICT-based national development strategy and ICT-based government innovation are overlapping within the government. In many countries, there are ministries

that oversee industrial policies targeting ICTs and there are also ministries in charge of administrative tasks within the government that want to use ICT. Thus, from the perspective of the whole country, there are always announcements of two to three administration strategies and policies related to digital strategy. Even among these ministries, self-serving actions and conflicts are displayed within the initiative of digital government implementation.

### *South Korea's ICT industry policy: evolution of vision and strategy*

In addition to establishing a five-year basic plan for national informatization, the South Korean government has established and implemented various information plans in order to address concurrent issues in a timely manner. The announcement years and project names are as follows (NIA, 2019).

- Cyber Korea 21 (March 1999)
- e-Korea Vision 2006 (April 2002)
- Broadband IT Korea Vision 2007 (December 2003)
- U-Korea Basic Plan (May 2006)
- Green IT National Strategy (May 2009)
- Software Power Country Leap Strategy (February 2010)
- Creation Vitamin Project (November 2013)
- Basic Plan of the Internet of Things (May 2014)
- K-ICT Strategy (March 2015)
- Intelligence Information Society, Long-Term Comprehensive Plan (December 2016)
- Sixth National Informatization Master Plan (December 2018)

### *Digital government policy in South Korea: evolution of vision and strategy*

All of the ICT plans discussed above focus on improving national competitiveness in terms of industrial policy. The South Korean government has separately developed various policies for implementing the digital government. The vision and strategy of these policies are summarized below.

- e-Government Vision and Strategy (1998)

  The first e-government vision and strategy announcement was made by the South Korean government in May 1998. This was promoted as part of administrative informatization efforts and in terms of improving national competitiveness to prepare for the twenty-first-century knowledge information society. The plan was to improve the competitiveness of the government and to build a small, strong government that is world-class. In this plan, the vision of e-government was set as "a one-time, online open government". Subsequently, the government carried out 18 tasks in six areas to achieve the e-government vision.

- The Kim Dae-jung government's Electronic Government Vision and Strategy (2001)

  The e-government vision announced by the e-government special committee in May 2001 was "a leap into the world's leading country in the twenty-first century". To this end, the government aimed to create a transparent and productive administration, provide civil service at home and in the office 24 hours a day and create the best business environment in the world. Specifically, the government selected 11 major projects and pursued the strategy of making citizen and corporate benefits a top priority, rather than promoting informatization by the ministries.

- Electronic Government Roadmap (2003)

  In August 2003, the Roh Moo-hyun government's vision of e-government was "the world's highest level of open e-government implementation". Specifically, it had three objectives, as follows. First, in the case of the public service, the civil service administration was to be accessible without a visit to a government office, thereby dramatically improving the level of administrative service. Second, in terms of administrative efficiency, it enabled real-time administration through computerization of tasks and information sharing. Third, it strengthened administrative democracy through public information disclosure and electronic citizen participation. To achieve these objectives, 31 tasks were identified and pursued.

- National Information Vision and Strategy (2009)

  In 2009, the Lee Myung-bak government's vision of national informatization was "the implementation of advanced knowledge and an information society of creativity and trust". To this end, the government aimed to realize a hard-working knowledge government, improve people's lives through digitization and develop a trustworthy information society. Specifically, it revised the informatization strategy and shifted its focus from promotion-oriented policies to utilization-oriented policies, from informatization of discontinuity and dispersion to informatization of communication and convergence, from information literacy to the information function dysfunction and from government-led informatization to governance based on private–public collaboration. To accomplish these goals, 75 projects in five major sectors were selected and implemented.

- Smart e-Government Vision and Strategy (2011)

  In March 2011, the South Korean government announced the Smart e-Government Vision and Strategy. It was deemed imperative to actively respond to rapid changes in the mobile environment, such as the use of smartphones, and to strategically provide better services. The vision of the smart e-government was "the implementation of the world's best smart e-government that unites and works with the people". Specifically, the government aimed to achieve the highest level of e-government service satisfaction

in the world. To this end, the government established four promotion strategies: an open government, an integrated government, a collaborative government and a green government. In addition, the South Korean government pursued businesses to accomplish the world's best mobile e-government.

- Government 3.0 Basic Plan (2013)

  In June 2013, the South Korean government announced "the promise to the people, Government 3.0". Government 3.0 pursued innovation in government service by utilizing ICT. The Park Geun-hye administration established the vision as building a country "where all are happy" and set goals such as "providing customized services to consumers" and "creating jobs and new growth engines". To this end, the government pursued three major strategies and ten major projects, namely to become "a communicating transparent government", "a hard-working competent government" and "a people-centric service-oriented government".

- e-Government 2020 Basic Plan (2016)

  The South Korean government established the e-Government 2020 Basic Plan in April 2016, the first five-year e-government plan established pursuant to Article 5 of the e-Government Act, aimed at accomplishing its vision of "enjoy your e-government".

  The e-Government 2020 Basic Plan is designed to cope with the increasingly complex and difficult social issues and the development of intelligent information technology. It is also intended to overcome challenges and respond to rapidly changing e-government environment changes such as the demand for the strengthening of customized integrated services for the citizen and taking a global e-government leadership role in the international community. To this end, the government set up the vision of e-government 2020 as a new digital experience – hence "enjoy your e-government!" In order to achieve this vision, the government set the goals of "citizen experience", "intelligent government" and a "digital new deal".

- Intelligent Government Basic Plan (2017)

  In March 2017, the South Korean government announced the Intelligent Government Basic Plan in response to the rapid development of ICT facilitated by the fusion of intelligent information technology. The "intelligent government" is a new digital government that utilizes intelligent information technology to optimize government services and innovate its way of working, and engages with citizens in national affairs to realize a safe, comfortable and coexisting society. To this end, the government is to achieve the vision of creating a "self-evolving 'WISE' government" based on six core values (fairness, transparency, flexibility, trust, creativity and engagement). Intelligent e-government pursues four goals (WISE):

  - wonderful mind-caring government
  - innovative problem-solving government

  - sustainable value-sharing government
  - enhanced safety-keeping government

- Digital Government Innovation Master Plan (2019)

  On October 29, 2019, the South Korean government announced the Digital Government Innovation Master Plan. Pursued with the vision of "a good world enabled by digitalization", it is the government's policy response to the era of AI and cloud-oriented digital transformation. In response to the need to play a new role in the development of artificial intelligence and cloud-oriented high-tech digital industries, the South Korean government is pursuing digital government innovation by preparing six priority tasks: revolutionized public service, revitalized public-sector MyData, an upgraded citizen participation platform, implementation of a smart work environment, the active use of digital services and the construction of an open data and service ecosystem. The contents of the Master Plan are as follows.

  - public service innovation: from application-based service to visiting service
  - activation of public-sector MyData: paper certificates are no longer used
  - an enhanced citizen participation platform: cherish the voice of the people
  - development of a smart work environment: office 2PC will cease to exist
  - activated cloud and digital service use: from service development to use
  - construction of an open data and service ecosystem: innovation with the private sector

### *The need for a clear vision and strategy*

As examined earlier, the South Korean government has always presented new visions and strategies in addition to ICT and digital government policies whenever the administrations have changed. Therefore, the establishment of a vision and strategy related to the policy of the digital government has now become a common practice and is no longer recognized (at all) by the general public.

In the past, by establishing such a vision and strategy, the government was able to allocate limited resources, determine policy priorities and secure a strong driving force. But now, countless projects are underway as part of the digital government's policies, so the public's interest is declining. Nonetheless, the presentation of a clear vision and strategy in digital government policy is very important. This is because the configuration of these visions and strategies plays the same role as a compass in government policies.

However, the way in which these visions and strategies are established must now change from its past form. In other words, due to the rapid spread of social network services (SNS), a government-oriented vision and presentation can no longer be useful. Now, it is time to come up with an agreed vision and strategy

through the electronic participation of citizens. In the past, taking into consideration the needs of the citizens, the government selected and provided government services electronically via the suppliers. Now, however, citizens are able to participate in the selection of the necessary government services and have entered a stage where they can decide how services are provided. Meaningful implications and lessons can be drawn from the Living Lab project, which is adopted in the smart city promotion policy.

Finally, it is crucial for public officials to be actively involved in the establishment of vision and strategy in digital government policies. Citizen participation is emphasized from the viewpoint of digital governance today, but the execution of such a digital policy is ultimately implemented by civil servants. Therefore, in order for public officials to play a leading role in the policy of digital government, it is important that they actively participate from the early stages of establishing the vision and strategy. Successful implementation of the digital government will be possible only with the dedication and participation of public officials.

## The president's leadership and a strong promotion system: blocking political exposure

A variety of institutional supports are needed to successfully implement digital governance. The most important of these various success factors is, of course, the leadership of the president. What should be considered important along with this is policy consistency, which is maintained based on this leadership.

In the case of the United States, despite the change in administration between Democrat and Republican governments, e-government continues to be systematically promoted, continued as a means of US administrative reform. In the United States, in ICT governance, not only president-centred strong leadership but also the cooperation and coordination system between various consensus bodies were established. Specifically, through the e-Government Act, strong leadership is practised based on the president's office and cooperation governance between various policy stakeholders. Informatization policies are controlled by the Office of Management and Budget (OMB) through the linkage of planning and budget, and independent informatization projects of individual departments are adopted by the federal chief information officer (CIO) council to integrate macroscopically. In conclusion, in the past 30 years, US digital government has been promoted under the leadership of the president, continuing as part of the presidential agenda regardless of the change of administration.

In the case of South Korea, the leadership of Roh Moo-hyun, in office from 2003 to 2008, enabled the government to become a global leader in digital government. President Roh Moo-hyun declared the accomplishment of digital government as part of the presidential and government agenda and pushed forward with great force from the early days of his presidency. Hence, the leadership of the president in the digital government can be expressed in various ways. The most important detail is establishing governance for the digital government and delegating authority to the system. This means appointing national CIOs and promoting digital innovation through institutional changes led by the CIO council.

### *Presidential leadership in the digital government transformation*

With regard to the promotion of digital government policies through digital transformation, the importance of presidential leadership can be summarized along three lines.

First, the president's role is the key to success. As the development phase of the digital government becomes more sophisticated, it becomes more important to coordinate the interests of ministries in digital government projects and thus the role of the president becomes more and more critical. However, this does not mean that the president should make direct adjustments. In fact, in the case of South Korea, the president has rarely made direct adjustments in e-government projects.[1] It is not necessary, nor is it desirable. The ministries should simply be able to recognize that the president has a deep commitment and interest in digital government projects.

Second, the president must support the ICT governance system. The reason for South Korea's e-government success is because the president clearly delegated authority to the e-government promotion system. In addition, by effectively linking the performance of the project with the budget, the president was able to exert powerful influence over e-government projects. In this process, civilian members of the committees under the presidency played a major role.

Third, it is necessary to enhance digital government expertise. The ICT field is a rapidly developing area. Especially in the field of intelligent information technology in recent years, the rate of development has accelerated. Therefore, it is difficult to catch up with the new ICT field with the existing level of ability of civil servants. In other words, it is necessary for the public sector to acquire externally competent ICT professionals. However, considering the level of payment and benefits in the public sector, the input of external expertise will be limited. In particular, this phenomenon becomes even more serious in higher positions. Therefore, there is a need to actively utilize the open CIO system. In the case of developing countries, in particular, it is necessary to consider how to manage such an open CIO's appointment as a minister or vice minister.

### *The designation of CIOs and the activation of schemes*

In the United States, in 1996, the Information Technology Management Reform Act (ITMRA) mandated the introduction of CIO titles to federal agencies, clarifying federal accountability for information resource management. Furthermore, information sharing between institutions was promoted. Since then, the CIO system has been continuously complemented by presidential executive orders and OMB guidelines. The US federal CIO's responsibility is to provide information technology policy advice and support for administrative agencies, but they are also directly involved in the agency's efficient management of information resources. The United States continues to drive digital government through these CIO councils.

In the case of South Korea, it is also operating a CIO system. According to the Guidelines on the Designation and Operation of the Institutionalization Chief Information Officer of the Administrative Institution (Presidential Order No. 157), the term "chief informatization officer" refers to the senior manager who is in charge of planning, coordinating and managing, taking part in the decision making process and giving advice directly to the director with overall goals, a development strategy and through the administrative innovation of informatization projects and information resources.

### *South Korea's CIO system*

The history of South Korea's CIO system is as follows. With the launch of the Kim Dae-jung administration in 1998, the CIO was established in the Framework Act on Informatization Promotion. Specifically, in October 1998, the Enforcement Guidelines for the Designation and Operation of the Administrative Institution's Information Officer (Presidential Order No. 73) enacted the introduction of the CIO system. Also, in 1999, the Chief Information Officer Council (with the head of the prime minister's office as chairman) was formed to share experiences and knowledge among the informatization officers and to discuss and coordinate informatization policies and projects. In 2005, Amendments to the Guidelines on Presidential Instruction (Presidential Order No. 157) added information on the tasks, composition, chairman and sectoral council of the chief information officer. In August 2009, the Basic Informatization Promotion Act was revised to the National Informatization Basic Act, and Articles 11 and 12 of the Act stipulated the matters concerning the tasks of the chief information officer and the operation and consultation of the CIO council, respectively.

### *The legal basis of South Korean CIO operations*

The Framework Act on National Informatization states the following.

> **Article 11 (Official Responsible for Informatization)**
>
> (1) The head of a national agency or a local government shall appoint an official responsible for exercising overall control over the efficient formulation and implementation of national informatization policies and coordination etc. of national informatization projects for the relevant agency (hereinafter referred to as "official responsible for informatization"). [Amended by Act No. 13340, June 22, 2015] …
>
> **Article 12 (Consultative Council of Officials Responsible for Informatization)**
>
> (1) A central administrative agency and a local government may organize and operate a Consultative Council of Officials Responsible for Informatization

(hereafter referred to as "Consultative Council" in this Article) comprised of officials responsible for informatization appointed under Article 11 for the efficient promotion of informatization, exchange of necessary information and consultation etc. over relevant policies …

### *Problems in operating the South Korean CIO system*

South Korea's CIO system is described in the government's 2014 Informatization White Paper as follows.

> **CIO Council Responsible for Informatization**
>
> The President's Council on Informatization Strategies under the Framework Act on National Informatization was abolished by government restructuring. Only the CIO Council Responsible for Informatization remains as a interagency cooperation and discussion body. The Minister of Science, ICT and Future Planning and the Minister of Security and Public Administration are appointed as co-chairs of the CIO Council. The high-ranking officials in charge of informatization at the MISP and MOSPA are appointed as co-secretaries. Director-generals for planning and coordination or director-generals for planning and management at each agency are appointed as the CIO of their respective agency. The CIOs of government institutions are mostly director-generals and directors who carry out planning and coordination in their organizations. In central administrative institutions, director-generals for planning and coordination in ministerial-level institutions, and director-generals of planning and management or directors related to management officers, coordination officers and policy officers who are in charge of informatization in assistant-ministerial-level institutions assume the role of CIO. In local governments, director-generals for planning and coordination or director-generals for planning and management at the director-general level, who coordinate policies and plans and manage spending, laws and administrative affairs, are working as CIOs.
>
> The CIO Council is currently in operation to coordinate ICT projects among ministries and discuss the measures for interconnection and sharing of information; therefore, serving as the principal working-level meeting of all officials in charge of informatization in all the ministries. It is also an interagency forum for collaboration and coordination as well as the sharing of experience and information in carrying out activities for inter-ministerial informatization projects and information resource management. However, the share of full-time Council members who can perform roles and functions faithfully is only 30%, whereas the share of members who hold additional positions is 70%, which has been pointed out as a limitation in facilitating the CIO system.
>
> As such, some criticized the CIO Council for being little more than a name, and the MISP and MOSPA held four CIO Council meetings by September

> 2014 to share best practices of ICT and informatization and enhance collaboration on economic innovation and the creative economy. The CIO Council reviewed the implementation of national informatization in accordance with the 2015 Implementation Plan for National Informatization, announced the plan to develop and distribute the cloud platform, and discussed the progress and development direction of the Creative Vitamins Project, among other things.
>
> (NIA, 2014, 22–23)

As described in the 2014 Informatization White Paper, as of 2019, South Korea's CIO system has only been renamed and managed by the Ministry of Science, ICT and the Ministry of Public Administration and Security. The Ministry of Science and ICT is in charge of the CIOs of 48 central government departments while the Ministry of Public Administration and Security controls the CIOs of 17 regional governments. Such a dual CIO system prevents strong enforcement of digital government implementation policies.

In addition, most CIOs in the South Korean public sector are not ICT experts but are headed by department managers. As a result, CIOs have a low level of understanding of ICT and digital government innovation. The reason for this is that the CIO system was not actively promoted because previous governments were promoting the e-government and digital government policies while forming special committees during each presidency. In particular, unlike the United States, South Korea was more inclined to pursue total-government innovation than to efficiently manage information resources and therefore preferred the special committee system over the CIO system for digital government innovation.

Of course, governance, which promotes digital government innovation, can be configured in various countries to cope with specific environments. However, as South Korea's informatization level is approaching its maturity, it is time to activate the CIO system. In other words, in terms of institutionalization that can continue to drive digital government innovation, South Korea now has to establish a system of constant promotion rather than relying solely on the leadership of the president. If such an organization that drives digital government innovation is legalized and institutionalized, it will be possible to reduce the political risk of frequent system change prompted by administration changes.

## Governance design for government innovation through the use of ICT: combining ICT and government innovation

Governance design has been one of the areas to have experienced the sharpest conflicts over the past three decades in the pursuit of e-government and digital government policies in South Korea. Centring on the cases of South Korea and the United States, there are four important factors in the success of digital government innovation. The first concerns which department is in charge of information and communication. The second is the promotion of the ministry in charge of administrative innovation. The third is the formation and execution of a

whole-of-government promotion committee. Finally, as in the US, the activation of the CIO system as governed by the budgetary authority is crucial.

### *The Ministry of Information and Communication*

Many policies of digital government are projects based on ICT. In particular, e-government projects in the past began with the construction of information super-highways. Also, currently, the core of digital government is the advancement of administrative services using ICT. In this regard, many countries have limited the operation of digital government to the organization responsible for ICT. This approach can be very powerful in the early stages of national informatization.

In South Korea, 20 years ago, the Ministry of Information and Communication rapidly established high-speed information and communication infrastructure and also promoted the informatization of the entire national society. In this process, the Information Promotion Fund, which was prepared from the profits of telecom companies, played a big role. Even in South Korea, the budgets of e-government support projects are largely funded by information-related funds.

However, while this approach may be effective in the promotion of the ICT industry, it does not include the function of government innovation; although it is a very good approach from the perspective of national informatization, it is somewhat insufficient in terms of promoting digital government innovation.

### *The Ministry of Administrative Innovation*

If the realization of the digital government is pursued as a means of government innovation by using ICT, the organization for promoting digital government should be under the ministries in charge of government innovation. In reality, however, many countries do not operate ministries dedicated to government innovation. In addition, these departments are given a relatively lower priority than those related to ICT in terms of budgeting and execution. Therefore, e-government policies have generally been carried out by ICT-related departments or affiliates with bigger budgets.

However, as the scope of digital government policy is gradually expanding with ICT convergence, it is desirable to establish ministries that can promote policies from a whole-of-government perspective. Specifically, the paradigm of national government operation must be changed to meet the digital age through ministries promoting digital government. Digital government policies should be in place to enable participation and communication by using virtual space, different from the way government enlightened and disciplined the public in the past.

This requires upgrading digital government policies from ICT projects to build systems to the operational level of national affairs. This becomes possible with the creation of a governance structure that is dedicated to digital government innovation.[2] Indeed, as of 2019, although the ministry in charge of government innovation is promoting e-government, due to different reporting systems,

it is difficult to pursue ICT-based government innovation. As such, combining the organizations responsible for ICT and government innovation is a very difficult task.

### *The establishment of a whole-of-government approach for ICT governance*

In the case of South Korea, the Ministry of Information and Communication and the Ministry of Public Administration and Government have long caused conflicts among ministries over the initiative of e-government projects. In this process, rather than promoting a whole-of-government approach to projects, the ministries each showed a tendency to focus on their own projects. This is evident in a statement by President Kim Dae-jung describing how e-government projects were in a delayed state in 2001 because of selfishness among the ministries. Due to conflicts among the ministries over e-government policy, in 2005, President Roh Moo-hyun directly rearranged the ministries so that information and communication-based e-government work was carried out by the Ministry of Information and Communication and e-government policies for administrative innovation were managed by the Ministry of Government Administration and Home Affairs.

Furthermore, when carrying out whole-of-government e-government projects that involve various ministries, the implementation of the projects tends to be delayed or fails because no single ministry is able to control or coordinate the whole process. In South Korea, the project to integrate police and prosecutors' information and communication networks and applications has been promoted since 2005, but the project was not properly implemented even by the end of 2007. This was because both the police and the prosecutors' offices were power agencies and no single ministry, neither the Ministry of Government Administration nor the Ministry of Information and Communication, could exercise coordinating authority over them.

Based on these realistic circumstances, South Korea had formed and promoted special e-government committees directly under the president. Such a special committee was able to exert strong power based on the president's interest and leadership. Therefore, they exerted great influence in promoting e-government in South Korea.

However, now, these presidential committees are facing limitations. Consistency in policies is unassured as new committees have been formed for each administration under the five-year presidential system. Thus, the composition of the whole-of-government promotion committee in the five-year single-term presidential system bears the weakness of losing coordinating authority if the president does not show interest.

From the experience and case of South Korea, it is clear that strong ICT governance directly under the presidency is necessary. However, it is difficult for this ICT governance to depend solely on the leadership of the president. This is because the effects of learning by public officials should be considered. If a

country's ICT governance is operated only by a committee under the presidency, it faces a big problem. That is, if the administration is replaced, it may be difficult to maintain the status of the committee. If the status of ICT governance changes due to administration change, there will be a situation where digital government policies are unable to obtain the continued support of existing public officials. Therefore, ICT governance must be institutionalized by law.

### *The institutionalization of ICT governance: control by budget*

The most ideal model for the institutionalization of ICT governance is the United States approach. However, this method is unsuitable for many countries, including South Korea. Nonetheless, if e-government or digital government policies are advanced beyond the maturity stage, then the introduction of this model may be considered. To this end, as discussed earlier, the CIO system must be properly implemented.[3] The institutional approach of a CIO Council will enhance policy sustainability. In this process, the role of the national CIO is also important. If the president appoints a national CIO and delegates authority, the CIO Council will gain strong momentum based on the leadership of the president.

In the US, in addition to the CIO Council, the OMB, which manages the budget, can practice leadership because it can exert strong control power based on the e-government office as stipulated in the e-government law. However, in many countries, given the degree and progress of ICT development, it may be unreasonable to implement e-government and digital innovation policies in budget-bearing ministries. Ultimately, in the case of ICT governance, it will be important to find the best model that fits each country's circumstances.

## Digital government reform consensus through citizen participation: digital governance

### *Implementing trusted government using ICT*

As we have seen earlier, visions and strategies that were established during the course of digital policy development in South Korea over the past two decades have shown many changes in their trends. In the early 2000s, the focus was on building infrastructure around ICT, centred on improving administrative productivity through the introduction of electronic documents. Then in the late 2000s, the visions and strategies focused on the introduction and application of ubiquitous technology and the use of software. During this period, e-government projects evolved into smart e-government and mobile e-government projects. In recent years, the introduction and application of intelligent information technology as well as the ensuing customized and pre-emptive administration services is drawing wide attention. Additionally, governance issues for the implementation of digital government is being widely discussed. This ultimately shows that the implementation of digital government is moving towards the possibility of direct democracy through electronic citizen participation.

In this process, however, there have been instances of using information policy as political rhetoric for each regime, with corresponding periods of exclusion from the national agenda. Today, the rapid development of intelligent information technology and ICT convergence highlights the possibility of an electronic surveillance society and also amplifies fears of the coming of a surveillance government. As a result, in order to be successful, today's digital government policies need visions and strategies that completely differ from those of the past. That is, all digital policies in cyberspace are based on secure transactions that ultimately require the implementation of a trusting government. Therefore, the vision and strategy of digital policy in the intelligent information age should focus on the implementation of trusted government through secure transactions. Consequently, various policies and strategies to achieve government trust should be established and implemented.

### *The need for digital governance*

We are now facing a situation where policies for implementing the digital government cannot be successfully pursued with past methods. The reason for this is that the digital government's approach must be changed in response to the rapid development of intelligent information technology and social change. The promotion of digital government policy cannot be successful when led by the government using the same methods as in the past. Therefore, the digital government's policy drive should be shifted from a government-led and supplier-oriented approach to a citizen-led and consumer-oriented approach. It is the establishment of digital governance that makes this possible.

In order to promote the digital government, not only the government but also citizens, NGOs and various stakeholder groups should actively participate. In the past, citizen participation using ICT was emphasized. However, now, through the development of intelligent information technology and SNS, new means are created for various stakeholder groups to participate at a lower cost. Thus, more citizens can participate in the digital government innovation process while overcoming the limitations of representative democracy. Now, the possibility of realizing direct democracy by systematically guaranteeing citizens' participation in various policy making processes of digital government innovation is increasing (Cho and Hwang, 2010; Myeong, 2016).

Therefore, in order to achieve digital government innovation, it is necessary to draw more citizens to the public forum to express various opinions and institutionalize social consensus. The current use of Living Labs in smart cities can also provide meaningful implications to this approach. To this end, digital government innovation should be recognized as an important policy for citizens and should capture the attention of various communities. If citizens can become producers of digital government innovation who work together with civil servants, and not just consumers, such digital transformation efforts will be successful. And success in digital transformation will also contribute to enhanced social integration.

In this process, responding to the era of intelligent information, the government should declare to the public that it will implement a trusted government through digital government innovation and not an electronic surveillance government. In addition, genuine government innovation should be pursued through the elimination of public distrust and the promotion of ICT-based holistic governmental reforms.

## Case study: governance for digital government in South Korea

On October 29, 2019, relevant government ministries in South Korea jointly announced a digital government innovation plan. This can be explained in terms of governance for digital government implementation as follows. Currently there are no ministries or organizations in charge of digital transformation in South Korea. The Ministry of Science and ICT exist, but this ministry manages science and technology, and information and communication policies. The Ministry of Public Administration and Security promotes e-government and government innovation policies separately. Therefore, no ministry is dedicated to digital government through digital transformation.

There are quite a number of committees on ICT. First, the Fourth Industrial Revolution Committee has been established under the president. Additionally, the ICT Strategy Committee has been established in the Ministry of Science and Technology while the Ministry of Public Administration and Security has a government innovation forum and an e-government promotion committee. However, all of these organizations work only in their own area and do not collaborate with each other. Therefore, there is currently no organization in South Korea that leads digital government innovation.

In March 2018, the South Korean government announced the Comprehensive Plan for Government Innovation, which stipulated the creation of a government innovation forum and a council of related institutions and proposed to hold government innovation strategy meetings twice a year. But these institutions are not permanent organizations and thus have no strong driving force or coordinating authority. Accordingly, the digital government innovation plan announced in October 2019 revealed the idea of installing a government innovation task force (TF) in the president's office. However, these ad hoc organizations have limitations in driving digital government innovation.

Therefore, with the current governance to successfully drive digital government, it may be difficult for South Korea to maintain its global leadership position in the digital government sector. The reason for this is that, as discussed in this chapter, it is not advisable to diversify the system at this point in time, when it is necessary to promote holistic digital government innovation through a combination of ICT and administrative innovation. In order to promote digital government innovation across the nation, a single department dedicated to digital government innovation that includes the existing e-government promotion organization should be established. It would be most desirable for the organization to

work with governmental innovation commissions established under the president to promote digital government through digital transformation.

## Lessons learned: the failure of Government 3.0 in South Korea

In many cases, we try to benchmark government innovation by focusing only on the success stories. Indeed, I would also prefer to increase the likelihood of success by introducing a success story, but surprisingly the lessons learned from failure cases are often more important. As part of the digital government project, the South Korean government implemented the Government 3.0 policy during the Park Geun-hye administration (2013–2017). The lessons learned on ICT governance from the failure of this policy are as follows (Chung, 2018).

> Recently, informatization policies require the cooperation of various ministries and agencies, not a single project of a ministry. Therefore, a strong promotion system is essential. This requires a strong committee structure directly under the presidency. In the early stage of the Government 3.0 policy, the Park Geun-hye government established the promotion system at the level of the Ministry of Government Administration and Home Affairs. Therefore, it did not get strong power when the policy was promoted. This is due to the fact that the ministry can't engage in other ministries' work at the level of one ministry.
>
> Therefore, throughout 2013, the implementation of the Government 3.0 policy was confusing and did not achieve concrete results. As soon as the Government 3.0 policy is no longer being implemented, the Ministry of Government Administration and Home Affairs suggests a strong propulsion system at the end of 2013. However, President Park is instructed not to construct a separate system of Government 3.0, but to utilize the existing Ministry of Government Administration and Home Affairs. In the beginning of 2014, the media began to criticize the issue of the government 3.0 promotion. Therefore, the government prepares a separate government 3.0 promotion committee to deal with it. In July 2014, the government will form a government 3.0 promotion committee under the Prime Minister's Office.
>
> In other words, the Korea government has spent nearly one and a half years since the launch of the Park Geun-hye government to construct a proper promotion system. As such, the composition of the Government 3.0 Promotion Committee was delayed, leading to missed so-called Golden Times in the early days of the ruling, resulting in policy confusion. Furthermore, the Government 3.0 Promotion Committee was composed of the Prime Minister's Office instead of the President, and thus could not exert a strong driving force. And because the foundation of the promotion system was based on the directive, not the law, it showed the limit that can't guarantee the permanence of the organization…

As we have seen, Korea's Government 3.0 Promotion Committee was unable to exert strong momentum. The reason for this is that the promotion governance system was not established by law but was operated based on regulations. In the past, all of the promotional organizations in charge of informatization in Korea had strong power.

The Presidential Committee on Governmental Innovation and Decentralization, which was established in the days of the Roh Moo-hyun government, was a presidential organization. The National Informatization Strategy Committee, established during the Lee Myung Bak administration, was also a presidential organization. However, the Government 3.0 Committee, which was formed during the era of Park Geun-hye, was established under the Prime Minister's Office.

Therefore, the Government 3.0 committee did not have the ability to efficiently integrate and manage ICT projects involving multiple ministries

Therefore, in order to successfully carry out integrated informatization projects, it is necessary to establish a strong promotion mechanism directly under the presidency. However, in many developing countries, ICT projects are still perceived as a single department of business overseeing telecommunications. Even if a separate ICT promotion organization is established, it is mostly a temporary governance structure. Therefore, in this case, most ICT projects have the possibility of failure.

Therefore, in order to design sustainable ICT governance, such a system should be established and institutionalized based on law. In this case, it is important not to design ICT governance by the governing ruling party alone, but to pursue it through agreement with the opposition party. So even if the regime is replaced, ICT governance can secure sustainability. However, it is hard to design ICT governance in this way, as the ruling party and the opposition party agree on each other.

## Notes

1 Of course, in the past Roh Moo-hyun government, President Roh Moo-hyun selected e-government projects as the presidential agenda, and coordinate the projects directly. In this case, however, conflicts between ministries and power games such as the prosecution and the police were coordinated.

2 Even in Denmark, which achieved the world's top ranking in the UN e-Government Survey in 2018, the digital strategy aimed at "implementing a stronger and safer digital Denmark" from 2016 by establishing an agency for digitization under the Ministry of Finance. The establishment and implementation of Digital Strategy 2016–2020 received high praise from the United Nations (UN, 2018).

3 In March 2009, then-President Obama appointed Vivek Kundra as CIO of the new government. Later, in August 2011, he appointed Steven Van Roekel, who served as FCC chairman, as the second federal CIO. In February 2015, Tony Scott, who worked for VMware, was appointed as the third federal CIO; the president entrusted all with digital government policy.

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# Index