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The Korean government's electronic record management reform : the promise and perils of digital democratization

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The Korean Government's Electronic Records Management Reform: The Promise and Perils of Digital Democratization

Abstract

Recently, the Korean government instituted a reform in its archives with the goal of increasing transparency in government and meeting the challenges of the new digital environment in records management. President Roh's administration focused on a "process and system" reform through a shift from paper-based records management to electronic records management. The *E-jiwon* task management system of the Office of the President, invented by President Roh himself, served as the archetype for the reform. This study explores and critiques the administration's choice of a "process and system" reform over institutional reform, examines the legal framework used to enact the reform and its shortcomings, and analyzes the benefits and deficiencies of the *E-jiwon* as a tool for democracy in the archives. It concludes that while the new digital environment can assist in promoting government transparency, technological change by itself is inadequate; ultimately, institutional change is necessary for true reform.

1. Introduction

Digital technology has presented significant opportunities for archives and records management. In addition to the obvious opportunities offered by this technology, such as global access and paperwork reduction, it opens new possibilities for e-democracy in public archives. Despite its positive potential as a tool for innovation and openness, however, digital technology's effect in a given society is limited without the civic energy for promoting a democratic agenda.

This energy is a prerequisite in order to establish and manage a democratic system in public archives, just as it is in other areas of a society.

Throughout Korea's recent history, academic and civil rights groups have taken the lead in the development of public records management. Civic engagement from outside the sphere of government has contributed significantly to reforming the national archival system. Due to the citizens' passion for and active participation in archival development, which has historically been intertwined with the broader development of Korean political democracy, the archives in modern Korea have evolved from an era characterized by the absence of public records under authoritarian regimes (1948–1993) to an era of legislation for the basic principles for managing public records under the first two civilian administrations (1993–2003) (Lee, 2006). Nevertheless, chronic malpractice in recording, managing, and disclosing information still existed even under the recent administration of Moo-Hyun Roh (2003–2008). Driven by the state slogan of "participatory government," however, Roh's administration set forth a plan for the democratic reform of the archival system.

The Roh administration set forth three goals — thorough recording, systemization of classified records, and expansion of information disclosure — and argued that accomplishing these goals would lead to an increase in democracy and "participatory government." The present study looks at President Roh's method of reform and discusses why his administration's "Roadmap" for reform took the shape that it did. It then examines in detail both the legal and the technical means through which the reform was accomplished, and asks to what extent these means were adequate for accomplishing the stated goals of the reform. The deficiencies of the measures adopted, both legal and technical, in terms of promoting transparency and democratic

practices in government record keeping, are discussed, and specific recommendations for improving the Korean electronic records management system are offered.

2. Research Method

The purpose of this research is to describe and analyze the contextual factors that conditioned the Korean government's electronic records management reform implemented by the Roh administration between 2003 and 2008. The primary focus of this study was on evaluating the results of the electronic records management reform as they related to the administration's stated democratic agenda for government archives. The present study used both quantitative and qualitative data analysis to examine the research question, an examination that revealed a complex structure of both benefits and deficiencies in the reform. A quantitative data analysis was used to analyze detailed technical data, such as the software manual used in the operation of the *E-jiwon*, the electronic Records Management System (RMS) of the Office of the President (OP) of Korea. As a "regulating code" (Lessig, 1999) of the electronic records management system, the technical requirements had to be analyzed in order to understand fully the political implications of the digital medium for the Korean government's records management system.

A qualitative data analysis was used to analyze provisions of Korean legislation and to explore the research theme in a comprehensive manner, by means of archival data. Through analyzing the Enforcement Ordinance (EO) of the Public Records Management Act (PRMA) and the new Presidential Records Act (PRA) since their passage in 2007, the present study shows how the laws function as a "literacy warrant" (University of Pittsburgh, 1997) guiding the Korean government's electronic records management reform; the study also offers policy

suggestions about how to realize the Korean government's reform in electronic records management.

2.1. Documentation and Archival Records

This study describes longitudinally the history of electronic records management in Korea and surveys the state of Korean public records management from 1948 to the Roh administration's recent attempt at promoting democratic reform in the government archives. Documents are significant sources for data collection in performing such a case study (Yin, 2003, p. 87). The present study collected documentary information — such as agendas, announcements, and other written reports of events — closely related to the Special Committee's activities dealing with the records management reform under the Roh administration.

Government reports and white papers — such as the *Final Report on Research and Development of Government Agencies' Records Management Reform*, the *Report on the Basic Technology Service for Electronic Records' Permanent Preservation*, and *Korea's E-Government White Paper: Completion of the E-Government Framework* — were used to understand the overall vision and effect of the electronic records management reform and the Korean government's push to transform the paper-based records management system into an electronic records management system.

Secondary documents from news agencies — such as newspaper articles and other pieces appearing in the mass media, as well as online administrative resource pages — were used to fill in other aspects of the electronic records management reform in the society at that time. This study also used archival records, such as copies of documents and records from the Library of

the National Assembly and of internal government reports on policies from the archives of public institutions.

2.2. Software Manuals, Reports, and Technical Supports by the OP's Record Manager

The present study analyzed the technical manual of the OP's electronic records management system — the *Manual for the OP's E-jiwon* — as the regulating technical code for the government's electronic records management reform. The Roh administration's approach to records management reform through the "process and system" made the analysis of technical requirements — represented most fully in the software manual — even more necessary. This study focused on the OP's *E-jiwon* because, as the first and symbolic pioneer in implementing records management innovation in Korea, it is to serve as the archetype for expanding the reform of electronic records management throughout the national government agencies (the *On-nara*, or "pan-national" system), a project which began in 2006 but will not be completed until 2013. In addition, the editions of the *Manual for Practical Business of the Records Management Reform* issued in 2005, 2006, and 2007 play a major role in determining the direction of the records management reform and the agenda pursued by each government agency in actualizing the reform.

In order to analyze the updating of technical requirements of the *E-jiwon* system, this study also examined the *Report on the Plan for Developing the Audit Trail for the Improvement of the Office of the President's E-jiwon* and the *Report on the Plan for Developing the Metadata for the Improvement of the Office of the President's E-jiwon*.

The software manuals, such as the *Manual for the OP's E-jiwon,* and the reports were obtained from the Office of the President's record manager through e-mail in the spring of 2007,

while other manuals were drawn largely from online sources. Relevant technical information from the OP's record manager, such as how to interpret the data in the forms of digital codes, was received several times through email during the period from February to May, 2007, including follow-up emails dealing with various questions that arose.

3. The History of Electronic Records Management in Korea

As a key role in expanding national competitiveness, Korea started an "e-government" program in the late 1970s. Intended to be an effective citizen-centered system to meet the needs of citizens and private businesses and to provide higher quality and faster government services, the e-government initiative aimed at making the government more transparent and accountable through an e-government network. The National Basic Information System (NBIS) project of the late 1980s preserved vital government records — resident registration, real estate, and vehicle records — in a database and created the foundation for the government's electronic records management system. Through the Five National Computer Network project of the late 1980s and the Korea Information Infrastructure (KII) project of the mid-1990s, the Korean government interconnected the public agencies through a fiber-optic electronic network, and eventually increased IT productivity and efficiency in the private sector through this network (Special Committee for e-Government, 2003).

These e-government projects resulted in the transformation of the government agencies' records management system (RMS) — and naturally so, "given that records management is neither a generic activity nor an end in itself, which can be evaluated apart from the government's business transactions" (Hedstrom & Wallace, 1999, p. 331). To reflect the transformation in the government agencies' daily transactions resulting from expanded use of

information technology, the Korean government implemented the Electronic Document System (EDS) in 1996 as a new Internet-based records management application. The EDS focused mainly on transfer of approved documents with verification through an e-authentication system across the government agencies.

The Electronic Promotion Act on Administration Processes for the Establishment of an E-Government (or E-Government Act) of 2001 established the legal framework for an e-authentication system. Authentication — "the process of verifying that a thing is what it purports to be" (Society of American Archivists, 2005) — has long been regarded as the main challenge in implementing E-Government, and to confront this challenge, the E-Government Act established requirements for digital authenticity. Most significantly, the E-Government Act stipulates the "administrative digital signature" as the means of authentication for public records and mandates record transfer with an administrative digital signature. To electronically approve and transmit a document through the EDS to various government agencies, the sender creates an "integrated file" for transmission, which includes the document encrypted with a digital signature and the administrative digital signature. To sign the "integrated file," the signer uses his or her private key to encrypt the hash value. The receiver of the message uses the signer's public key to decrypt the hash value. Through the Government Public Key Infrastructure (GPKI),[1] the administrative digital signature serves as the authentication for electronic record transmission.

Technically, the Korean government's electronic RMS was based on the EDS while legally it took as its framework the E-Government Act of 2001; when Moo-Hyun Roh took

[1] The GPKI trust model of the Korean government has a strictly hierarchical architecture. The Government Certification Management Authority was established in April 2000 as the Root Certification Authority of the Ministry of Government Administration and Home Affairs and has functioned as the highest certification authority.

office as president in 2003, he undertook to transform public archives and records management in both its legal and its technical aspects.

4. President Roh's Plan for Electronic Records Management Reform

President Roh's views of reform in records management were conditioned by a mixture of his own techno-optimism and the government-led IT policy, which was aimed at gearing up IT productivity and efficiency in the private sector through the public sponsorship. Since the mid-1990s, national IT development has been promoted by the government as the primary engine of institutional efficiencies and economic growth. The desire for dramatic IT growth in Korea led to the creation of high-speed telecom mobility and connectivity across the country. The desire to be in the forefront of IT innovation has deeply influenced various government reform programs, and the techno-centric approach to the national archives is one byproduct of such IT-driven state policies.

Roh may be the first world leader to be fully in tune with the Internet. He has been described as "the world's first president to be elected with the broad support of the online generation" (Watts, 2003, p.16). His image at the time of his inauguration was one of being technically flexible and open to the Internet. Midway in his term of office, Roh held an unprecedented "Internet conversation with the nation" on March 23, 2006, which had the largest audience in the history of online broadcasting in Korea. Moreover, the president himself uploaded five letters per month onto the presidential website (the Office of the President Briefing), in order to promote direct communication with the nation without the intervention of the press. His nickname "the night-owl president" derived from his staying at the keyboard until late at night for decision-making and electronic approval of e-documents through the OP's records management system — an image that embodies his openness to digital technology. Most

importantly, President Roh's invention and patenting of the *E-jiwon*, the OP's Task Management System (TMS), demonstrates his interest in the use of digital technology in public records management.[2]

President Roh's strong preference for digital technology has shaped national policy. The Roh administration has carried out thirty-one E-Government initiatives, pouring in 300 billion *won* (more than US $300 million) annually. This consistent policy implementation for the E-Government project has created a world-class E-Government system. For instance, the UN ranked Korea in 5th place in an E-Government index, and the E-Government ranking report released by Brown University ranked Korea 86th in 2005, while in 2006 Korea was ranked number one (Taubman Center, 2007).

For archives and records management, the Roh administration implemented digital technology as the policy tool for a reform which aimed at dissolving the gap between the laws for public records management (such as the Act on Disclosure of Information by Public Agencies of 1996 and the Public Records Management Act [PRMA] of 1999) and the actual malpractice of public records management in Korea. Shortly after Roh took office in 2003, a large group comprised of historians, scholars, and schoolteachers presented a manifesto calling for "the new government to achieve the reform of management of public records and disclosure of information" (*Hankyoreh*, March 29, 2003). The historians and teachers urged the government to employ a professional archivist as the director of the National Archives of Korea (NAK), so as to strengthen the NAK's professional status. Furthermore, rather than the NAK being under the Ministry of Government Administration and Home Affairs (MOGAHA), the academics strongly recommended elevating the status of the NAK to that of an "administration" thereby elevating

[2] In accordance with the "Regulations Concerning Compensation of Public Officials for Inventions Created in the Performance of Their Duties," the *E-jiwon* has a national patent allowing it to be used for free by institutions, individuals, or organizations.

the director of the NAK to the rank of vice-minister and identifying the NAK as an independent agency. Such moves would strengthen the NAK's political neutrality and its executive power. The coalition of historians, teachers, and civic activists considered change in the status of the NAK to be the first and most urgently needed step towards improving the chronic problems in the archives and records management in Korea.

In response to the civic groups' demands, Roh decided to reform the Korean records management system. In a meeting for policy planning in October 2004, Roh declared that "innovation in records management is the basis for the government reform." (Kim, 2006) To manage the archival reform, the government first established the Presidential Committee on Government Innovation and Decentralization (PCGID) in order to improve the government's bureaucratic efficiencies. The PCGID conducted reform in eight areas: public relations, planning and general affairs, government, decentralization, finance, E-Government, policy research and evaluation, and records management. As concrete steps were made toward records management reform, the PCGID established the Expert Advisory Committee to the National Archives Management System and appointed members in November 2004. In cooperation with the Expert Advisory Committee, the PCGID finally approved a "Roadmap" for national records management innovation in October 2005. The Roadmap established the following goals: thorough recording, systemization of classified records, and expansion of information disclosure. Based on the Roadmap, the PCGID implemented a reform of the archives and records management focused on two areas: the legal framework and the archival "process and system."

There is a view that, for government records, most of which are created in the course of day-to-day operation, the more tightly the record-capture process is integrated into the conduct of the operation itself, the more likely a more "transparent" record will be produced (Todd, 2005).

The Roh administration relied upon this pragmatic viewpoint, believing that democracy in archives could best be achieved through digital-based automation, since the technology carries out transactions with minimum intervention and therefore with the greatest objectivity. With a Korean bureaucratic culture uncongenial to record keeping, the Roh administration regarded the digital automation of records management as the perfect solution to a chronic problem; in so doing, he cast his lot with technological reform to the exclusion of institutional reform.

5. The Legal Reform in Archives and Records Management

The legal reform under the Roh administration involved a thorough revision of the Enforcement Ordinance (EO) of the Public Records Management Act (PRMA) and the passage of a new Presidential Records Act (PRA), both in 2007. The legal reforms were part of the response to the citizens' demands for reform, especially the demands for thorough recording and wide disclosure of information. The specific form the legislation took, however, followed the lead of the PCGID's Roadmap, and thus was designed primarily to provide a "literary warrant" (University of Pittsburgh, 2006) for the new electronic RMS.

Unfortunately, the 2005 PCGID's Roadmap failed to reflect civic groups' demands for a structural reorganization of the archives, and, following the President's lead, limited the scope of the reform to a technical one involving innovations in the electronic records management system. The legal framework for the archival reform — the revised EO and the new PRA — followed suit and dealt almost completely with technical, rather than institutional, reform. Through these two pieces of legislation, the government hoped to accomplish a shift from a paper-based records management system to an electronic records management system, as well as a shift to more

thorough recordkeeping and the expansion of information disclosure. The following analysis suggests the deficiencies of this legal reform.

5.1. Legal Micromanagement of Technical and Functional Requirements

To respond to the new digital environment, the government revised the PRMA in 2006, and then in 2007 carried out a thoroughgoing revision of the PRMA's Enforcement Ordinance — the Enforcement Ordinance being the legal instrument that confers power to enforce the Act and entrusts the execution of the Act to those responsible. Following the principle of all public records being electronically created and managed (EO, Article 4), the revised EO specifies the technical and functional requirements of record creation and management systems. These specifications reflect the guidelines and standards of electronic records management internationally, such as those of the International Organization for Standardization (ISO 15489),[3] and especially those in the U.S. and Australia, such as the U.S. Department of Defense's Standard for Electronic Records Management (DoD 5015.2-STD) and Australia's Victorian Electronic Records Strategy (VERS).

Although the U.S. and Australia recommend these technical and functional requirements to their government agencies as guidelines or standards for electronic records management, in Korea these requirements are imposed on the government agencies by law, through the EO. The revised EO incorporates ISO 15489 through an eight-stage records management process, while it mandates DoD 5015.2-STD as a design criterion standard for electronic records management software application in Korean records management, especially for the management of classified

[3] ISO 15489-1 (2001), Information and Documentation – Records Management, Part 1, General, ISO, Geneva. As a practical guide for the design and implementation of records systems, ISO 15489 prescribes that records systems 1) support records with the characteristics of authenticity, reliability, integrity and usability, 2) that records systems have the following characteristics: reliability, integrity, compliance, comprehensiveness, and 3) that they have been completed in a systematic fashion.

records. The EO employs the VERS mostly in the aspects of preservation and authentication, and as a framework of standards for authenticity and permanent retention of public records.

The revised EO addresses three major issues arising in the new digital environment: 1) record granularity, 2) requirements for interventions in the record creation process, and 3) functional requirements of the electronic RMS. As for the issue of record granularity, the level of record control and of a record's descriptive granularity becomes much smaller in response to the electronic environment; therefore, the revised EO defines a "task unit," as the smallest unit of records management — a much smaller unit than the "business unit" (based on the classification of the agency's function), which was previously the smallest unit of records management.

As regards the second issue, interventions in the record creation process reflect post-custodianship of electronic records management because digital technology requires new types of interaction with record creators; therefore, the revised EO mandates that "the electronic record creating system have the ability to create and manage transfer information" (Article 27-2) as well as registration information, so as to provide an unbroken provenance for the records at the time of transfer. The revised EO also requires that the record creating agency (government agencies) transfer the records after attachment of a digital signature in order to guarantee authenticity, integrity, reliability, and usability (Article 26-3). The Korean government followed the VERS in adopting as a verification mechanism a "digital signature" as the new means of authentication for digital archives. In addition, for the electronic record creating system, the new EO specifies the use of either an "electronic document system" or a "task management system," both of which are now being used in the OP for creating electronic records (Article 2-5).

Finally, the functional requirements of an electronic RMS in the digital age must respond to technical challenges to prove the integrity, security, and authenticity of digital records;

therefore, the revised EO stipulates that specific metadata (including task explanation by classification of task unit, retention period, criteria of retention period, disclosure, and access scope) be created and managed by the creating agency's RMS (Article 29-2). The EO requires that the RMS specify access privileges for each digital record, making access possible only for persons with permission. Further, the EO prescribes that the RMS manage the information to make possible the tracking of access history and processing (i.e., the audit trail), and that this management information about the access history and processing be automatically produced by the system and not be revised or deleted (Article 32). For record preservation, the RMS is to manage the record after conversion to document preservation format (the Portable Document Format, or PDF) and long-term preservation format (PDF encapsulated in XML) when the record's retention period is longer than 10 years. In the case of converting to long-term preservation format, the RMS is to attach an administrative digital signature in the record and to add the metadata concerning preservation activities and then to re-encapsulate the record in XML (Article 37).

These legal requirements in the EO — for example, whether to use either an "electronic document system" or a "task management system" as the electronic record creating system, the use of a digital signature as the tool of authentication, PDF as the unique format for document preservation format, and PDF encapsulated in XML with digital signature for long-term preservation format — are mostly concerned with the technical and functional requirements of the RMS, after the manner of such guidelines and standards as DoD 5015.2-STD, VERS, and ISO 15489 Records Management. In an ever-changing digital environment in which various technical standards and techniques for the permanent retention of records and for records

management are still in progress, the specification of technological standards by legal enactment is significantly problematic.

5.2. Legal Loopholes in Transparency and Disclosure Requirements

In its focus on the shift to digital-based archives and records management environment, the revised EO largely neglected the Roh administration's stated political agenda — that of "transparent government" through thorough recording (and archiving) and expansion of information disclosure. Nevertheless, the revised EO and the Presidential Records Act (PRA) do include some provisions in this area. For instance, the revised EO requires the electronic record creation system to manage information of a record's modified content and history created in the process of its approval. Furthermore, the scope of documentation generated by the electronic creation system includes the reports and deliberative materials created in the process of task performance, as well as officially approved or accepted records, which were defined as the scope of documentation in the original EO (Article 16).

In the Korean traditional registry system, public records were broadly divided into two categories, "disclosure" and "non-disclosure," which are similar to the categories "open" and "closed." The Roh administration's legal reforms subdivided the category of non-disclosure records, introducing the new categories of "classified" and "presidentially designated" records — the former created in the revised EO (Article 71-79) and the latter in the PRA (Article 17). In the new system, the confidentiality level, in descending order, is as follows: presidentially designated records, classified records, other non-disclosure records, and disclosure records. A presidentially designated record may only be disclosed after a specified period, and unlike other records, presidentially designated records may not be submitted to the National Assembly unless

authorized by its two-thirds majority vote. A "classified" record still cannot be disclosed, but now "other non-disclosure records" can be disclosed when redacted, but with "read only" privileges (copying not allowed); despite these restrictions, this last is an advance in disclosure over what had existed previously. To further expand record disclosure, the revised EO requires periodic (every five years) re-classification of these non-disclosure records and institutes a principle of automatic disclosure of a non-disclosure record 30 years after its creation, whereas the original EO had merely called for reclassification of a non-disclosure record after 30 years.

At the organizational level, the legal reforms designated two commissions — the National Records Management Commission (NRMC) and the Presidential Records Management Commission (PRMC) — as the core agencies for thorough recording and wide disclosure of records. They serve as the entities to determine the main issues of public records management — such as establishment of the principles of records management, review of presidentially designated, classified, and other non-disclosure records for reclassification, and presidential records management. To promote the transparency and political neutrality of the National Commission, the revised EO elevates the Commission from being under the Minister of Government Administration and Home Affairs to being under the Prime Minister (Article 12, 15). Further, the selection of its commissioners from various sectors including "public officers, the chief of the NAK, and non-public officers with experience and scholarship in archives and records management" (Article 12) suggests that inclusion of archival experts from the outside would provide a politically neutral review of records management policies. The PRA also defines the Presidential Commission as an entity of "political neutrality, task independence, and objectivity" (Article 5, 6). To promote the commissioners' neutrality, according to the PRA, "the commissioners shall be appointed by the chairperson of the National Commission from among

persons who are members of the National Commission, the director of the Presidential Archives, and persons with extensive scholarship and experience in presidential records management" (Article 5, 6).

Despite these stipulations, the revised EO and the PRA evidence several deficiencies in achieving the goal of "transparent government." First, their provisions are vague about how to ensure the "political neutrality, task independence, and objectivity" of the two Commissions. The appointment of all commissioners (including the chairperson) of the National Commission by the Prime Minister, as specified by the EO, is calculated to undermine political neutrality, even if outside experts sit on the Commission. Furthermore, given the stipulation that only a bare majority of the twenty commissioners is necessary to decide any issue (Article 12), the absence of any requirement as to the minimum number of outside experts presents a serious challenge to maintaining the political neutrality of the Commission. And, since the NAK is under the control of the MOGAHA, the political neutrality of the head of the NAK, who also serves as a commissioner, is in doubt. The revised EO fails to define who is or is not a non-public official, opening the way for retired members of the government or other cronies of the party in power to be seated on the Commission. Moreover, the PRA stipulates that the chairperson of the National Commission appoints the members of the Presidential Commission—but the chairperson of the National Commission is him- or herself appointed by the Prime Minister, which does not bode well for the independence and neutrality of either commission. In addition, the PRA fails to specify who is to appoint the director of the Presidential Archives, who is responsible for requesting the Presidential Commission to review and declassify presidentially designated records.

Finally, the PRA's creation of six categories of "presidentially designated records"—

records that the president can order sealed for up to 30 years — hardly contributes to the expansion of information disclosure — supposedly one of the main goals of the Roadmap's records management reform. The terms defining the categories — such as "records that could endanger an individual's […] reputation if disclosed" (Article 17-4) and "records that could be expected to cause political confusion if disclosed" (Article 17-6) — are so vague that it would be possible to classify almost anything under one of them. This leads to doubts about the sincerity of the Roh administration's desire for records management renovation, and raises doubts about how many of the OP's records will actually be declassified under the new legislation. The flaws in the administration's legal reform seem likely to impede any advance in "thorough recording and expansion of information disclosure."

6. The *E-jiwon*: Roh's Electronic Record Creation and Management System

The "process and system" reform — the principal tool of the Roh administration's reform — was launched with the implementation of the *E-jiwon*, or "electronic (digital) knowledge garden." The *E-jiwon* is the task management system of the Office of the President used for electronic record creation and records management. The *E-jiwon* had already been in use, at the president's own initiative, since 2004, before the Roadmap was issued, which explains the leading role of the *E-jiwon* in the Roh administration's reform.

To promote renovation in the OP's electronic RMS, the government set forth a three-step plan: first, "the establishment of records management infrastructure," such as the refinement of archives and records management-related laws and the establishment of a new electronic RMS (i.e., the *E-jiwon*) by 2006; second, "the improvement of the electronic RMS " and the establishment of an integrated retrieval system of record information, to be accomplished from

2007 to 2008; and third, the establishment of the network for integrated utilization of national records and the creation of digital archives, to be accomplished from 2009 to 2013. Through establishing the technical requirements for the *E-jiwon*, the OP hoped to bring about thorough recordkeeping, the expansion of information disclosure, and a shift to electronic record creation and management that is based on a task management system. The following analysis, however, which focuses on the technical application of the *E-jiwon* to the OP's actual records management, shows the difficulties of achieving these three reform goals merely by establishing the technological and functional requirements of the *E-jiwon*.[4]

6.1. The Record Creation System and its Limitations

To implement the three major reform goals (thorough recording, wide information disclosure, and reflection of digital environment), the record creation system (RCS) of the *E-jiwon* established certain technical and functional requirements as part of the record creation process. For thorough recording and wide information disclosure, the RCS employs a "task document card management" system. This system, which has especially attracted the notice of archivists and record managers, includes a "task management card" and a "document management card." Even though the expression "card" is used officially in describing these two forms, they are actually digital documents. Designed to show clearly the task's progress status, the "task management card" is based on the classification of record folder by task unit. This card helps determine the record's retention period and disclosure time as established by the record creator at the time of creation, and as a result, it prevents the delay of information disclosure

[4] Currently in the OP, although system administrator e-mail and presidential websites are managed in the *E-jiwon* after their creation by another system (the individual task system), born-digital presidential documents and presidential itinerary documents are created, as well as managed, by the *E-jiwon*. As a result, this study focuses on the creation and management systems of born-digital presidential text-documents in order to analyze the *E-jiwon* itself as a tool for reform.

caused by a delay in information classification. The "document management card" is designed to keep track of the entire process from record creation to record approval, recording the decision-making process as well as the final decision. To create a document about policymaking, all the officials who approve a particular policy must leave their opinions on the record. The document management card, thus, promotes thorough recording, as it serves to clearly identify who advocated what in the policymaking process. The metadata required by the record creator in the "task document card management system" — that is, in the task management card and the document management card together — can be seen in Table 1, below.

(Insert Table 1 here)

The RCS is able to verify a record creator's access privileges and to create the metadata of both the record and the record folder (i.e., the registration and technical metadata), as well as the Submission Information Package (SIP),[5] and the authentication information. The process is as follows: after being generated by the record creator with access privileges, a record is transferred to the record manager in the creating (processing) department of the OP, along with its attached task management and document management cards. The record manager then makes a SIP consisting of the original document, the task and document management cards, the metadata of the record, the metadata of the record folder, and the digital signature. Some metadata of the record and record folder are created automatically by the RCS while others are

[5] The SIP is a bundle for ingesting the record into the RMS in the Open Archives Information System (OAIS) Reference Model, the most widely acknowledged model of a system that addresses digital preservation through defining the processes required for effective long-term preservation and access to information objects. The standards for the SIP are those of the Consultative Committee for Space Data Systems, 2007.

added by the record manager in the creating department. These two types of metadata can be seen in Table 2 and Table 3.

(Insert Table 2 and Table 3 here)

The RCS reflects the new digital environment in the process of record creation through the technical and functional requirements — such as access privilege verification, metadata creation, SIP creation, and the digital signature — incorporated in the system. Further, the RCS represents an improvement over past malpractice, especially in its "task document card management" system, which mandates the insertion of several metadata to promote thorough recording and information disclosure. Nevertheless, it still has deficiencies that need to be addressed if the reform goals are truly to be accomplished.

First, the RCS does not require the metadata specific to the digital recording medium. In comparison with the set of core elements set forth in the Preservation Metadata: Implementation Strategies (PREMIS) Data Dictionary (PREMIS Working Group, May 2005), which has been widely accepted, the limitations of the OP's metadata are clear. Unlike the object metadata in PREMIS, the RCS's metadata lacks information of fixity (a message digest algorithm), format registry, content location, software and hardware, operating system, and relationship between an object and one or more other objects. Although the record is preserved in a long-term preservation format (PDF) and is finally encapsulated in XML in the OP, the technical environment of the original file is still required in the system for the record's authenticity.

Second, while the RCS can generate numerous metadata elements in the record creating process — a total of 57 metadata, in fact — only eight are mandatory (including five that are

automatically produced). Since it has been shown that in practice people are poor recorders of metadata, it is doubtful how many metadata are actually produced in the daily transactions of the OP. An increase of automatically created metadata and an increase of mandatory metadata are both urgently needed for the implementation of metadata to be effective. Without addressing these metadata limitations of the RCS itself and the human factors involved in the actual record creation workflow, it is impossible to ensure thorough recording and archiving in the digital medium, even if the record is created in an automated electronic system.

6.2. The Records Management System and its Limitations

From the time the record manager in the creating department ingests the SIP into the records management system (RMS), the record is managed in the system by a record folder. To promote thorough recording of all actions in the records management process, the RMS has three functional requirements: the abilities to record the "audit trail," to generate management metadata, and to generate destruction metadata. The audit trail — which records all events affecting a record and thus is a necessary mechanism for thorough recording — is generated automatically in the RMS as a result of system parameters. In accord with the audit trail requirements of the National Archives of Australia (2006), the RMS allows the detection of unauthorized access to records. The RMS manages audit trails as records and makes it impossible to modify them; otherwise, no trust could be placed in the audit trail. Configurations and reconfigurations of the audit trail itself — which can only be performed by the system administrator — are captured in the audit trail. The trail includes information about what records were retrieved, the identity of the user retrieving the records, and the date and time of retrieval (OP, 2007).

The RMS also supports the generation of management metadata by the record manager in the OP's Records Management Department (RMD). These metadata show what record preservation actions have been taken. The metadata of the record folder generated in this phase can be seen in Table 4.

(Insert Table 4 here)

The RMS, further, requires destruction metadata in the case of record destruction in order to prevent arbitrary record destruction and maintain a transparent record destruction process. The RMS's destruction metadata are given in Table 5.

(Insert Table 5 here)

As regards wide information disclosure, the RMS gives the record manager of the OP's RMD the ability to grant "read only" permission for non-disclosure records. The RMS also makes possible the generation of redacted documents for disclosure through the following steps: first, registration of the record for disclosure (total or partial disclosure) by the creating department's record manager; second, conversion to a PDF file for disclosure by the record manager of the OP's RMD; and third, disclosure of the PDF file through a document security system with black marks through the classified parts.

Reflecting the new digital environment in records management, the functional requirements of the RMS embody the ISO15489 Records Management Process, which has eight elements: record capture, registration, classification, access and security, disposal and retention,

storage and handling, usage and tracking, and disposal fulfillment. For the first element, record capture, the RMS performs an automatic virus check and the record manager in the OP's RMD performs a metadata check. Once the record is validated, record capture is complete.

The second and third ISO15489 elements, record registration and classification, have already been performed within the RCS. This is because the *E-jiwon*, which exercises post-custodianship through active intervention into the record creation process, supports record registration and classification within the RCS. The creating agency's record manager uses a classification scheme according to which records are classified by record folder. The RMS operates a template database for this classification scheme, which is based on "retention schedule management by the task unit" and "disclosure type management by document."

In the RMS, the fourth ISO15489 element, access and security, is accomplished through access privilege management. The RMS has two kinds of access privilege, one for disclosure and the other for non-disclosure records (and record folders). Only registered groups, which have user profiles in the RMS, have access privileges, and only the system administrator can configure registered groups. For security, configuring user access groups to the presidentially designated /classified records requires the passwords of both the system administrator and the secretary of records management in the OP's RMD. The fifth ISO15489 element, disposal and retention, refers to determining disposal status and retention periods, which has also already been performed in the classification process of the RCS.

The sixth ISO15489 element, storage and handling, which refers to the preservation and management method, is implemented in the RMS after the closure of the record folder. The RMS converts the records in the completed record folder into PDF and then, following the OAIS Reference Model, converts the SIP into an Archival Information Package (AIP), which consists

of the following: a base 64 encoded original file/attachment; a base 64 encoded PDF file/attachment; the metadata of the record and record folder; and a digital signature. Based on the Victorian Electronic Records Service (VERS), this model requires the RMS to convert the document to a "long-term format" (PDF) and then encapsulate one or more documents in XML along with their metadata and to digitally sign the bundle.

The seventh ISO15489 element, usage and tracking, is implemented by the RMS's functions of searching for and retrieving records and of maintaining audit trail. The RMS supports three kinds of search — for record, record folder, and professional search—and gives the record manager of the OP's RMD the ability to add related records to the requested record. For authorized users, the RMS also creates and maintains "short-pick" lists or templates that are automatically populated with commonly used records and record folders. For tracking, the RMS follows audit trail requirements and retains them according to determined retention periods.

The eighth and last of the ISO15489 elements, disposal fulfillment, refers to continuous retention, physical disposal, or transfer of jurisdiction or ownership of records. The RMS supports destruction as part of disposal fulfillment. For transfer of a record to the presidential record center or to the NAK for long-term preservation, the RMS transmits the AIP, which is encapsulated in XML, along with an administrative digital signature certificate, which is attached to confirm that the electronic document has not been altered since it was created.

The RMS of Roh's Task Management System is based on ISO15489 Records Management processes, the OAIS Reference Model, and VERS, the most widely accepted standards in electronic records management today. Nevertheless, as a response to the challenges of the new digital environment for records management, the RMS has serious limitations.

First, there are deficiencies in the thorough recording of information: the audit trail of the RMS lacks the date and time of any changes made to metadata associated with records or record folders. Further, a retention schedule for the audit trail has yet to be firmly established — at present, the RMS preserves these audit trails until the last year of the president's term and then transfers them to the presidential record center, and the OP's stated plan was for the audit trails to be retained at least until the next president's retirement. Because the integrity of the audit trail is an essential part of the record, this issue demands immediate attention. In addition, although the RMS generates the metadata regarding what preservation actions are taken for a record, the management metadata of record folders do not record the date, time, and outcome of such actions.

Second, there are deficiencies in various technical aspects of the RMS. For instance, while the RMS specifies the authentication mechanism for access to non-disclosure records, for access to disclosure records, an authentication mechanism that would validate each user at the start of a session (e.g., user-ID/password login) is not specified; nor does the RMS specify each user group's scope of access to disclosure or non-disclosure records. Further, the RMS is supposed to generate a backup file for safe preservation. A backup function inside the system, however, is inadequate; backup file preservation off-line and off-site is also necessary.

Third, the RMS has deficiencies that relate to the human components of the system. The VERS approach for preservation of records in the OP, which is intended to fix records at (or close to) the time of creation using digital signatures, has the disadvantage that metadata which change over time are not well supported, and this creates difficulties for record managers: as Caplan (2007) notes, although it is possible to "layer" metadata to support changing or accreting metadata, this is not efficient in actual records management workflow for elements that are

continually modified. Similarly, when transferring a record to the presidential record center or to the NAK for long-term preservation, attaching an administrative digital signature certificate for every document is significantly labor-intensive and can create "traffic jams" in the daily records management workflow; consideration should be given to allowing the record manager simply to use his or her own key, since these are registered by the Government Certification Management Authority. Finally, more consideration needs to be given to how the trustworthiness of the system administrator, who is the only person to control the server, is to be guaranteed. Without such a guarantee, it is impossible to trust the RMS itself.

7. Conclusion

The present study has surveyed the Roh administration's attempt to reform the Korean government's archives and records management by means of a "process and system" reform. In doing so, the deficiencies of such an approach have become clear. While the administration set forth a "Roadmap" that specified thorough recording, systemization of classified records, and expansion of information disclosure as the goals of its reform in records management, the means adopted to achieve them were inadequate in various ways, both technically and institutionally.

As an experimental model for a nationwide digital record archives, Roh's *E-jiwon*, while innovative in many ways, has technical and practical deficiencies. Several specific recommendations can be made as to how to address these deficiencies.

First, in terms of the audit trail issue, the *E-jiwon* needs to be revised to add the date and time of any change made to metadata associated with folders or records in the audit trail profile. In addition, the OP's plan to establish a retention schedule for the audit trail that extends at least

until the administration following the one in which the record was created has left office should be put into effect immediately.

Second, in view of the evidence that in actual practice people are poor recorders of metadata, the number of metadata automatically generated by the *E-jiwon* should be significantly increased.

Third, as mentioned above, metadata that change over time are not well supported by the VERS approach employed by the *E-jiwon*; other, more recent technologies provide more flexible and more efficient long-term preservation. For example, DSpace, an open source digital repository system developed for institutional repositories, implements the OAIS Reference Model, offering "bit preservation," assigning persistent identifiers, and a built-in data integrity check, which make possible long-term preservation that is independent of specific technology after ingesting into the DSpace system. Furthermore, the Metadata Encoding and Transmission Standard (METS), an XML schema, defines the hierarchical structure of a digital object and relates that structure to a list of all files included in the object (Caplan, 2007). The files themselves can be linked to or embedded within the METS document. Additional metadata can be supplied by the use of an "extension schema," a convenient way to plug in descriptive or administrative metadata created according to an independent metadata schema (Library of Congress, 2006). It is recommended that the *E-jiwon* replace the VERS approach with a combination of DSpace for its digital repository and the METS for metadata description for long-term preservation purposes.

Fourth, to address the problems of workflow in the real world application of the *E-jiwon* system, rather than attaching an administrative digital signature for every document, it is recommended that the record manager be allowed to use his or her own signature key, since

these are registered in the Government Certification Management Authority.

Roh's belief that digital technology, by reducing human intervention in the records management system, would bring transparency to the government archives caused the legal reform to focus on the specifics of the electronic RMS, rather than on institutional reforms in the archival agencies. Similarly, Roh's designation of the National Records Management Commission and the Presidential Records Management Commission as the decision-making entities for crucial public records management issues — such as establishing the principles of records management, and the review of presidentially designated and classified records for reclassification — failed to provide a mechanism to ensure the political neutrality of these commissions, while the PRA's designation of a wide range of "presidentially designated records" have served to seriously undermine the goal of expanding information disclosure.

Early in his administration, Roh stated that "innovation in records management is the basis for government reform," but his concept of "innovation" was limited to technological innovation. To fulfill the goals of the Roadmap, however, what is most urgently needed at this point is not further refinement of technical aspects of the RMS, necessary as these are, but institutional reforms, many of which were demanded at the outset by scholars and civil rights groups. Therefore, as of primary importance, we offer the following recommendations about institutional and legal reforms of the Korean government's records management system that have not yet been addressed:

First and most significantly, the National Archives of Korea should be reorganized as an independent agency, and rather than being under the Ministry of Government Administration and Home Affairs (MOGAHA), the NAK should be elevated to the status of an "administration" (thus elevating the director of the NAK to the rank of vice-minister).

Second, a professional archivist should be hired as the director of the NAK, so as to strengthen the NAK's professional status.

These moves would strengthen the NAK's political neutrality and its executive power, and assist in remedying the lack of neutrality in the two commissions that determine the main issues of public records management; thus, we can recommend the following:

Third, the director of the NAK should name the commissioners and the chairpersons of the National Records Management Commission (NRMC) and the Presidential Records Management Commission (PRMC), and the director of the Presidential Archives, as well as the system administrator for the *E-jiwon* — or at the least, the director of the NAK should have the power to nominate the candidates for these positions from which the administration may choose.

Fourth, there should be a legal requirement that at least half of the commissioners on the NRMC be "non-public officials," and that "non-public officials" be clearly defined by law as those who have never held positions in the military or the national government and are not close relatives of those who have held positions in the military or the national government.

Fifth, the Presidential Records Act (PRA) should be revised to much more narrowly define the six categories of "presidentially designated records" (which can be sealed for up to 30 years), especially the category of "records that could endanger an individual's […] reputation if disclosed" and the category of "records that could be expected to cause political confusion if disclosed."

Finally, the technical functional requirements of the electronic records management system prescribed in the PRMA's Enforcement Ordinance should be downgraded from legal to regulatory requirements, so that they can be more easily changed in response to ongoing technological changes (of which our recommendations above about replacing VERS with

DSpace and the METS are an example).

The Korean government's archival reform under the Roh administration was based on the assumption that digital technology automatically brings citizens more transparent access to government records. Although President Moo-Hyun Roh was politically progressive, his attitudes towards archives and records management were conditioned by the government's IT-based growth policy under the E-Government framework. He believed that technology would remove the undemocratic legacies of the past in the archival system. Roh's archival reform thus confused the bureaucratic efficiencies brought about by digitizing the records management system with enhancing democracy in the archives; as a consequence, Roh's reform has trivialized the basic criteria of democratic development in archives: thorough recording and archiving, and more disclosure of and access to records. It is evident that, in archives and records management as in other fields, technological innovation without institutional reform is limited in its effects and, in some ways, merely serves as a bureaucratic tool to reinforce the habitual practices of the past.

Given the results of our analysis, further research needs to be done on the interaction between institutional structures, legal or regulatory requirements, and technical systems in government archives. Instead of merely examining different electronic records management systems and how they might be improved, researchers need to look at the political and institutional context in which such systems are deployed, and specifically, at which institutional and legal or regulatory structures lead to the best practices of thorough recording, wide disclosure, and general transparency—since it is through these aspects, not merely through improved bureaucratic efficiencies, that public archives make their contribution to democratic societies.

These issues are of significance to all who study or work within government archives, but especially to the growing number of countries that are in the process of moving from authoritarian regimes to developing democracies. Fareed Zakaria (2003) has observed that stable, constitutional democracies rely as much on the balance of powers and on such often-unelected institutions as an independent judiciary as they do on regular elections to ensure that there are limits on power of rulers and that the rights of minorities are protected. Public archives play such a role in democratic and democratizing societies as well, and their independence should be fostered and strengthened in the new age of digital democracy.

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Table 1. The metadata created by record creator in the OP

Metadata	Description	Management card used	Remarks
Task name	The name of a task unit in which the record is included	Task and document cards	Mandatory
Content and purpose of task	The general or agency-specific functions and activities which are documented by the record	Task card	Mandatory
Task history	The dates and descriptions about a task performance from its starting until its closing	Task card	
Functional classification	The highest level of business activity that the record documents in accordance with the MOGAHA's "Government Function Classification Scheme": One can choose the OP's task support, records management, or the OP's records management system improvement.	Task card	
Retention period and its criteria	The length of time that a record must be kept before it can be destroyed and its ground such as laws or reasonable explanation: One can choose permanent, quasi-permanent, 30 years, 10 years, 5 years, 3 years, or 1 year.	Task and document card	
Task type	The recognized form a task takes, which governs its internal structure and relates to its transactional purpose or to the action or activity it documents: One can choose the normal task or project task.	Task card	
Assessment classification	Indication of achievement management task (yes or no)	Task card	
Task period	The time period covered by the task (starting and closing date)	Task card	
Scope of disclosure	Disclosure scope of record folder: One can choose public ownership in entire OP, inside processing department, or non-public ownership (non-disclosure).	Task card	
Document title	The name given to the document	Document card	Mandatory
Document keyword	The keyword, which indicates that the document is about a particular subject category	Document card	
Information provenance	A description of the environment that produced the document	Document card	
Document function	The general or agency-specific business function(s) and activities which are recorded in a document	Document card	Mandatory
Attachment file	A document associated with and filed in the card	Document card	Text, Mandatory
Creation date	The creating date of a document	Document card	
Creator	The name of an individual who creates a document	Document card	
Document path	Business processing for transaction of the document: indication of name and position of the person with whom the document resides	Document card	
Request status of document	Indication of the next business process, which is needed for transaction of the document	Document card	
Request content of	Description of the next business process for transaction of the document	Document card	

document			
Processing result	Indication of performance for the request (yes or no)	Document card	
Publicity standard	The basic unit for advertising or other activity designed to rouse public interest in document: One can choose task unit or individual document.	Document card	
Publicity categorization	Under the broad categorization of publicity with publicity and non-publicity, publicity is divided into planning publicity, press release, publicity through email, uploading in homepage, and inside publicity. In the case of non-publicity, its criteria are to be filled out.	Document card	
Publicity period	The length of time that a document is publicized	Document card	
Publicity opinion	A description, in free text prose, of the publicity	Document card	
Document number	A unique identifier for the document	Document card	
Classification	A means of classifying documents based on their secrecy requirements: One can choose first, second, or third level.	Document card	
Secrecy protection period	The length of time that a document is protected with secrecy	Document card	
Disclosure time	The date and time for information disclosure: One can choose immediate disclosure, in the time of task closure, in the time of retirement of the next president, or date specification.	Document card	
Disclosure delay criteria	The criteria of disclosure delay: One can choose information prescribed as secret or non-disclosure by the law, information related to the national security, information related to life, person, property of the nation, information related to the processing trial, information in decision-making or inside reviewing process, private information, management and business related information, or information which could give benefit or disadvantage.	Document card	
Access privileges	Special permission to access the functions such as read only, read and print, or read, print, and copy	Document card	

Source: Author's summary of data derived from The manual for the Office of the President's *E-jiwon* [in Korean] (2006).

Table 2. The metadata of record and record folder generated automatically by the RMS

Metadata	**Description**	**Remarks**
Record number	The unique identifier of a record	Record metadata
Record creation date and time	The dates and times at which record creation occurs	Record metadata
Record creating system type	The name of the electronic record creating system such as *e-jiwon*/electronic document system or individual task system	Record metadata
Record folder classification number	An identifier which uniquely identifies the record folder from all other folders	Record and Folder metadata
Record folder creation year	The year at which record folder is created.	Folder metadata

Source: Author's summary of data derived from The manual for the Office of the President's *E-jiwon* [in Korean] (2006).

Table 3. The metadata of record and record folder created by the record manager in the creating department

Metadata	**Description**	**Remarks**
Record (record folder) title	The official name given to the record	Record and folder metadata
Management department	The department which is responsible for all movements and management actions that are carried out on a single record (record folder) over time	Record and folder metadata
Record type	The recognized form a record takes, which governs its internal structure and relates to its transactional purpose	Record metadata
Original copy (yes or no)	Indication if the record was created from the copy sent or the copy received	Record metadata
Electronic record (yes or no)	Indication of whether the physical "carrier," on which a record is stored, is electronic or not	Record and folder metadata
Creator	The name of an individual who creates a record (record folder)	Record and folder metadata
Creating department	The official department name which creates the record (record folder)	Record and folder metadata
Approval person	The name of the individual who approved the record	Record metadata
Provenance information	A description of the environment that produced the record	Record metadata
Summary information	A summary, in free text prose, of the content and/or purpose of the record	Record and folder metadata
Retention period	The length of time that a record folder must be kept before it can be destroyed	Record metadata
Data format	MIME Type as the format of body and attachment parts	Record metadata
Extent	The physical size and/or capacity of the record	Record and folder metadata
Original file name	The name of the original file	Record metadata
File ID	An identifier which uniquely identifies the file	Record metadata
Number of attachment files	The number of files associated with and filed in the record	Record metadata
Record folder type	A category which identifies a record folder	Folder metadata
Disclosure status (yes or no)	Indication for information disclosure	Folder metadata
A number of record in the record folder	A number of record, which is included in a record folder	Folder metadata
A number of electronic file in the record folder	A number of electronic file, which is included in a record folder	Folder metadata
Page number of the record	Page number of the record	Folder metadata
Closing year of record folder	The year at which a record folder is closed	Folder metadata

Source: Author's summary of data derived from The Manual for the Office of the President's *E-jiwon* [in Korean] (2006).

Table 4. The metadata of the record folder created by the record manager in the OP's RMD

Metadata	Description	Remarks
Destruction performance	Indication of whether destruction of a record folder should be performed or not (yes or no)	Folder metadata
Transfer performance	Indication of whether a record folder is transferred or not (yes or no)	Folder metadata
PDF conversion performance	Indication of whether PDF conversion of a record folder has been performed or not (yes or no)	Folder metadata
Package conversion performance	Indication of whether the information package (SIP) is converted to AIP or DIP.	Folder metadata

Source: Author's summary of data derived from The Manual for the Office of the President's *E-jiwon* [in Korean] (2006).

Table 5. The Destruction Metadata*

Metadata	Description	Remarks
Number of "examination certificate" of record destruction	The unique identifier of "examination certificate"	Created by the system
Examiner name	The name of the individual who examines a record destruction	Created by record manager in the OP's RMD
Destruction registration date	The dates and times at which record destruction is registered	Created by record manager in the OP's RMD
Record folder title	The official name given to the record folder	Created by record manager in creating department
Record folder classification number	An identifier which uniquely identifies the record folder from all other folders	Created by the system
Creating department	The official department name which creates the record	Created by record manager in creating department
Creation date	The creating date of a record	Created by record manager in creating department
Retention period	The length of time that a record folder must be kept before it can be destroyed	Created by record manager in creating department
Creating department's opinion	The request opinion of record destruction: One can choose destruction, reservation, or change of retention period.	Created by record manager in creating department
Creating agency's opinion content	The criteria for opinion result in free text prose	Created by record manager in creating department
Examination opinion of record destruction	The examination result by the record manager in the OP's RMD: One can choose destruction, reservation, or change of retention period.	Created by record manager in the OP's RMD
Examination content of record destruction	The criteria for the examination opinion in free text prose	Created by record manager in the OP's RMD
Examination content of the examination commission	The examination opinion of the examination commission in free text prose	Created by record manager in the OP's RMD
Final result of destruction of the examination commission	The final examination result of the examination commission: One can	Created by record manager in the OP's RMD

	choose destruction, reservation, or change of retention period.	

Note: * metadata created by the system and by the record managers in creating department and in the OP's RMD.
Source: Author's summary of data derived from The manual for the Office of the President's *E-jiwon* [in Korean] (2006).