TOWARD A HOLISTIC MODEL FOR THE MANAGEMENT OF DOCUMENTS, RECORDS, AND ARCHIVES

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ABSTRACT: This article is condensed from a doctoral dissertation that aims to find a more applicable model to manage the whole life of all records in all media in the information age. It is based on a study of archival theories and practices using content analysis, case study, and comparative methods. This study constructs a new model named "Interactive and Integrated Model for the Management of Documents, Records, and Archives (I^2 DRA)." I^2 DRA merges the advantages of the life-cycle and records continuum models, bridges their gaps, and highlights information openness, information governance architecture, long-term preservation, risk management, and other critical characteristics.

Introduction

The development of archival theories is based on the practice of archives management, and it impacts practical work in reverse. Archival theories and practices have continually interacted with each other. As Terry Cook and Joan M. Schwartz stated, archival theories lead archivists' cognitive thinking, the logic of practice, and functional performance.[1] Michael Buckland pointed out that a complete theory of records management should take into account theoretical concepts and practical needs.[2] James Lappin also called for a next-generation archival theory that comes from practice.[3]

Traditional theories focused on paper-based records, and they tended to consider records as nonactive entities. Only archives management needs were considered. However, in response to the challenges of authenticity, integrity, and accessibility of electronic records, the theory paradigm has changed significantly, and now the management of documents as well as early-stage recordkeeping system design are taken into account. As Frederick J. Stielow indicated, archival theories that have emerged since the 1980s are often called new paradigm theories.[4] The theoretical transformation has envisioned archival procedures in whole new ways, and it has impacted management systems and practices significantly. The life-cycle model of Philip Coolidge Brooks[5] and the records continuum model of Frank Upward[6] have stimulated a lot of discussions and much enthusiastic debate.[7]

The goal of this study is to generate a model that is more appropriate and applicable to records management in the information age. The author first examined the currently

influential archival theories and international standards to form a research framework. Then, the author made a bottom-up comparison of the national archival practices of the United States, the United Kingdom, Australia, and Taiwan. Aiming to develop an integrated model that is both conceptual and feasible, the scope of the study then covered the following matters:

1. The history of records and archives theories and the impact of electronic records;
2. The relationships between the life-cycle and records continuum models;
3. The emphases of ISO-15489 (Records Management)[8] and ISO-16175 (Principles and Functional Requirements for Records in Electronic Office Environments);[9]
4. The strategies and practices of the US National Archives and Records Administration (NARA); the National Archives, UK (TNA); the National Archives of Australia (NAA); and the National Archives Administration of Taiwan, ROC (TNAA).

As used in this article, "documents" are texts in any medium and format that are produced or received by government staff for organizational activities in the working stage; documents are not yet approved by the authority of the agencies.[10] "Records" are documents that are formal and approved by the agencies and serve the purposes of administrative and legal accountabilities. Documents and records are commonly understood to have the properties of content, context, and structure.[11] "Archives" are records from government agencies that are transferred to the Archives through an appraisal process.[12] "Electronic records" are records in electronic formats, either born digital or reborn digital. The main issues challenging the properties of electronic records include integrity, authenticity, and accessibility.[13]

Archival Theories and Government Recordkeeping

The Impact of Electronic Records on Archival Theories

The Features of Archival Theories

Stielow pointed out that theories are tools for understanding and solving problems and are also the foundation for constructing professional knowledge and skills based on rational and systematic thinking.[14] Considered driven by practice[15] and practice-informed,[16] archival theories should serve the continuous maintenance needs of the content, context, and the structure of records regardless of physical or electronic format.[17] Cook and Schwartz indicated that theory and practice are the integration of the archival profession's principle and responsibilities, and they must maintain the accountability of records, connect the past and the future, and serve as an interface for the creators, records, and users.[18]

In response to the management issues of electronic records, archivists have debated for decades what new features archival theories should incorporate. In the early 1960s, when electronic records first appeared, archivists still favored paper-based records

over easy-to-manipulate electronic records due to serious concerns about account-ability. Not until the late 1960s did archivists begin to change their thinking due to the increasing use of recordkeeping systems. They recognized that paper format is only an attribute of records. Many records on computers or tapes are unique and have significant archival value. Electronic records could no longer be ignored. Some scholars and specialists believed that electronic and paper records are no different in nature; the theoretical principles derived from paper-based records management could continue to be applied to electronic records.[19] Others, however, believed that essential differences exist between paper and electronic records and that new theories and models should be developed to better manage electronic records.[20] Catherine Bailey even claimed that archivists must train themselves to become IT specialists and therefore capable managers of electronic records.[21]

New Archival Paradigm Theories

The complexity of electronic records stimulated scholarly interest in proposing new theories and models. The records continuum constructed by Upward and discussed below in detail is one of the most important models. It challenges the life cycle of records that had dominated records management since the 1940s.[22] Cook, another important archival theorist, also asked archivists to abandon their "paper-bound mindset" and embrace a new paradigm or intellectual framework in an electronic environment.[23] David Bearman and Margaret Hedstrom also supported the new paradigm and proposed a new electronic records management model that emphasizes the need to analyze organizational functions, define business operations and metadata of records, determine access control tactics, and establish a preservation system.[24] Linda Henry synthesized the new paradigm ideas and called for a change of archival focus "from records content to context, from the record itself to the function of the record, from an archival role in custodial preservation and access to a non-archival role of intervening in the records creation process and managing the behavior of creators."[25]

She also urged new paradigm supporters to attend to long-term preservation issues to enlarge the archival functions. She advocated archivist engagement in the germination and production stages of electronic records and involvement in the design and construction of electronic record management systems.[26]

In summary, the characteristics of new paradigm theories include

- Emphases on both the context and content of records;
- Advocacy for the integration of archival and organizational functions;
- Involvement in the early stages of documents and records management; and
- Attention to the roles and limitations of information and communications technology.

Changes in Archives and Records Management Thinking

For the international community, the life cycle of records model and the records continuum model are the two most influential schools of archival thinking. Their theoretical evolution and strengths and weaknesses are summarized briefly as follows.

Life-Cycle Model

In response to the growing space problem caused by the massive amount of records, Brooks first proposed the idea of "life history of documents" in 1940 and, a few years later, revised the idea into the "life history of given bodies of records,"[27] which is regarded as the origin of the life-cycle model. The model included the elements of the life history of documents, including organizational functions, process policies, document materials and creators, and their intersection. Document creators, records managers, and archivists are responsible for creating or keeping the archival value at the different steps of the process.[28] This is illustrated in Figure 1. Brooks conceptualized the whole life history of records as an integrated, continuous entity and emphasized that the life history of records is associated with all involved parties and thus needs the stakeholders' cooperation and attention throughout the processing of the documents.[29] His thought has significantly influenced records management practices across countries and helped shape other stage models, for example, Philip C. Bantin's four-stage model,[30] Z. M. Yusof and R. W. Chel's three-phase model,[31] and Jay Atherton's eight-stage model, which was later revised into a four-stage model.[32]
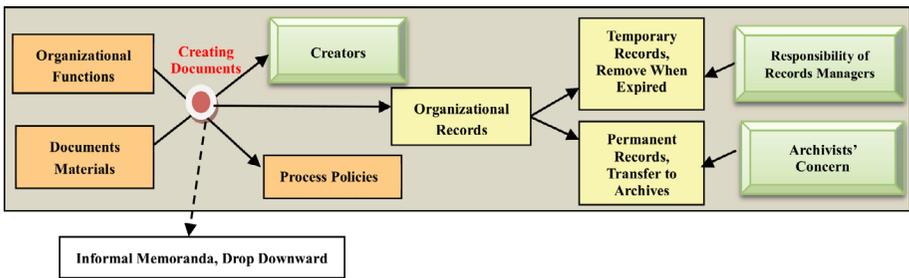
Figure 1: The Simulated Diagram of Life History of Documents, based on Philip Coolidge Brooks, 1940 (illustrated by author)

The emergence of electronic records has created decades of debate over the validity and applicability of the life-cycle model. A competing approach called the records continuum model provides a different worldview of records management. Sue McKemmish argued that the concept of *life cycle* derives from the natural sciences. By metaphorically describing the documentation process as a series of life stages, the entire record management process could be segmented into several specific components where administrative tasks could be delineated and assigned.[33] As Bantin indicated, the prominent feature of the life-cycle model is the clear distinction of responsibilities between records managers and archivists, while the records continuum model, in contrast, envisions the integration of the two traditionally distinct roles to achieve accountability and reliability.[34] In fact, Brooks did not reject or overlook the close relationship between archivists and records managers, and he did advocate archivist involvement in the early stages of the entire record management process. An excessive emphasis on the segmentation of management activities by stage in existing archives management literature, as well as the ease of implementation, helped life-cycle

thinking to gradually dominate practice and achieve archival orthodoxy. As Chi-Shiou Lin argued, the idea of a record's life cycle became a "reification" and was taken as a "natural property" of records.[35]

In reaction to the problems of electronic records, life-cycle model proponents are reshaping the life-cycle concept. These include Atherton, who was actually regarded as a pioneer of the records continuum.[36] The International Council on Archives (ICA) has proposed a life cycle of records architecture (referred to as ELC) combined with archival functions (see Figure 2). This seeks to integrate the idea of a records continuum into the management of record life cycles. The archival functions are creation, appraisal, preservation, and access/use. The ELC model advocates the extension of records management into the system planning stage and divides records management into three phases: conception, creation, and maintenance. The preservation of and access to records are explicitly included in the model, and the concepts of active, semi-active, and nonactive records are highlighted in the maintenance phase.[37] In reaction to the highly dynamic electronic environment, ICA believes that four principles should govern practice throughout the entire life cycle:[38]

- Be involved in the entire life cycle of electronic systems that create and retain archival electronic records to ensure the creation and retention of electronic records that are authentic, reliable, and preservable.
- Ensure that records creators create and retain records that are authentic, reliable, and preservable.
- Manage the appraisal process and exercise intellectual control over archival electronic records.
- Articulate preservation and access requirements to ensure that archival electronic records remain available.
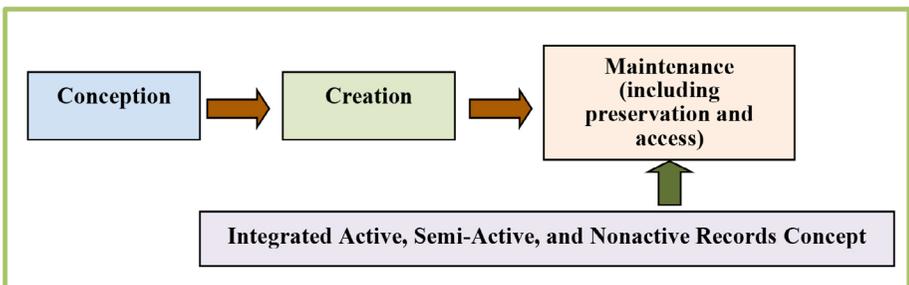
Figure 2: The Entire Life-Cycle (ELC) Architecture, based on International Council on Archives (ICA), 1997 (illustrated by author)

ICA has published ELC guidelines and further cooperated with ISO to establish international standards that embody the ELC model. Based on ELC's properties, this study argues that the ELC is an evolved version of life-cycle thinking that can be viewed as a new paradigm model. It will be compared and contrasted to the records continuum model in the following discussion.

Records Continuum Model

Upward constructed the records continuum model based on an analysis of archival ideas and of Anthony Giddens's theory of structuration. Describing the model as a postcustodial approach,[39] Upward emphasized records in time/space and described the structural properties of the continuum as including, first, a concept of records with continuing value and their uses for transactional, evidentiary, and memory purposes; second, a focus on records as logical rather than physical entities; and third, institutionalization of the recordkeeping profession's role and the need to integrate recordkeeping into business and societal processes and purposes.[40]

As shown in Figure 3, the records continuum is built around four axes: identity, evidentiality, transactionality, and recordkeeping on four dimensions: create a trace of activity, capture the traces as record, organize the record as memory, and pluralize the memory. "The axes encapsulated major themes in archival science, and each axis presented four co-ordinates which could be linked dimensionally."[41] In brief, Upward considered that first, the identity axis represents the actors, departments, and organizations that signify the identity of individuals who carry out the institutionalization of social cognition; actors are the source of structuring. Second, the evidence axis concerns the evidentiality of records and the role of recordkeeping in serving organizational memory. Third, the transactional axis speaks to the interactions between organizational actions, activities, functions, and purposes at different levels, from the micro to the macro. And fourth, the recordkeeping axis represents recordkeeping
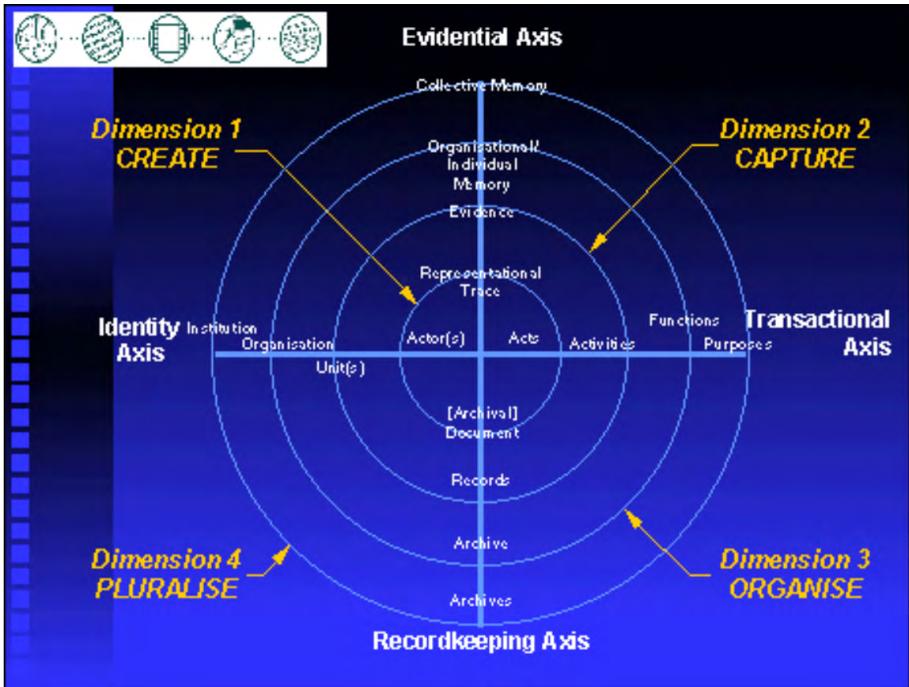
Figure 3: The Records Continuum Diagram, Frank Upward, 1996

responsibilities from personal to societal levels that together preserve the experiences of a human society. The entities to be managed at the four levels are documents, records, archive (the totality of records generated from a specific organization), and archives (the totality of organizational archives in a society).[42]

McKemmish further argued that a record is "always in a process of becoming," which means the record's meaning and usage are subject to constant change and interpretation over time. As such, the records continuum represents a paradigm shift in archival theory. She contended that the records continuum is "a tool for perceiving and analyzing complexity, providing multi-dimensional views of recordkeeping and archiving."[43] The model has induced many discussions and arguments in the archival profession and is often compared to the life-cycle models of Bantin,[44] Bearman and Hedstrom,[45] Henry,[46] Duranti,[47] Cook,[48] Ridener,[49] and Lappin.[50]

Advantages and Disadvantages of Life-Cycle and Records Continuum Models
Both models provide important insights into archival practices. Bantin considered the life-cycle model a record-based model for its focus on record life duration and distinction of records management stages; in contrast, the records continuum is more a "management model" for its emphasis on record continuity and dynamics and the blurring of managerial responsibilities at different levels.[51]

Each model has its weaknesses in addressing contemporary electronic records problems. The basic criticism of the life-cycle model has been that it segments responsibilities by linear stage and thus does not easily meet the needs of contemporary records, which are complicated and diverse in format. Particularly, the traditional definition of nonactive records and the associated records-transferring practices cause concerns about the possibility of failure to capture valuable electronic records in time. On the other hand, the records continuum model has been criticized for its complexity and the difficulties in its application. Besides, both models have insufficient discussion and inadequate conceptualization of records access. Upward even argued that the life cycle ignores the concept of use and openness.[52] However, his model still focuses more on preserving evidentiality and fails to explicitly include access issues in the diagram. The archival community has been calling for new models that take into account important elements like social context and organizational functions.[53] This study thus sets out to propose a new model based on the previous theoretical concepts and an examination of the national practices in four countries.

Recordkeeping Practices

Values Manifested in International Standards and Guidelines
A close examination of international standards and guidelines on electronic records management—including ICA's guidance,[54] ISO-15489, and ISO-16175—showed the following prominent archival values.

The Integration of the Concepts of Life Cycle and Records Continuum
The entire life-cycle architecture first proposed by ICA in 1997 can be viewed as an

attempt to integrate the ideas of life cycle and records continuum in a working model.[55] ICA further advocated that records management play a role in assisting evidence-based decision making based on organizational records, which showed an appreciation of the values drawn from the record continuum model.[56] In 2008, ICA published *The Principles and Functional Requirements for Records in Electronic Office Environments* (ICA-Req) and specifically included system development tasks in record management processes.[57] From this development, we can see that ICA has drawn from both the life-cycle model (e.g., various record process stages and the associated tasks) and the records continuum model (e.g., multilayered records management responsibilities and managing the roots of and systems for record processes).

Renewed Archival Functions and Meanings

ICA specifically defined the archival functions as including the creation, appraisal, preservation, and access of archives. In so doing, it sought to redefine and transform the archival profession for the ubiquitous electronic environment and to ensure that the evidentiality and accountability of organizational activities will be preserved by developing good recordkeeping systems that capture and manage the electronic traces of business processes.[58]

Unifying the Management Model for Records in Different Formats

In 1997 and 2005, the ICA guide included electronic records management as separate chapters. But in 2008, it began to advocate the management of records of all media and formats in the omnipresent electronic office environment and to address the need for a holistic management model of records in all formats. It also emphasized the function of metadata in connecting various archival contexts and records in different media. This change shows the influence of currently prominent archival theories. That is, electronic records prompted the emergence of new paradigm theories. But the new paradigm actually speaks to the integration of records management for all types of records for the goals of long-term preservation and access. This idea will continue to influence future archival theory development.

The Integration of Records Management and Business Processes

ICA originally viewed records management as a separate realm from organizational business processes and focused on defining electronic records and electronic record management tasks. In 1997, it advocated a thorough consideration of records management needs in designing recordkeeping systems. However, by 2005, ICA's advocacy had changed to integrate the records management and organizational business processes so that business decisions would be based on solid evidence, including evidence from organizational records. To do that, archival functions had to be designed and implemented in accordance with business processes, and the records had to be accessible to various organizational actors via effective access mechanisms. In 2008, ICA formulated the ICA-Req (it became ISO 16175 in 2010 and 2011) and divided the functional requirements of electronic records management systems and records in business management systems into Module 2 and Module 3. Module 2 retains the structure of system design (conception), creation, and maintenance as in the 1997 guide.

It further added the access and administration functions. Module 3 stresses the capture of records created in organizational businesses and the convergence of records in the records management system. Moreover, it conceptualizes recordkeeping as depending on business contexts and archival purposes, and articulates records management tasks based on workflow analysis. Module 3 shows that the concepts of *record, business,* and *work processes* had been incorporated into modern archival thinking, and the idea of electronic records management (ERM) had also evolved to electronic documents and records management (EDRM).

Archival Strategies in Four Countries

The United States (NARA), United Kingdom (TNA), and Australia (NAA) lead the world in archival theories and practices in their management of government records. Taiwan is an advancing country, and TNAA is developing an integrated architecture of government documents, records, and archives management. This study reviews how these four countries approach records management, examining official statements, guidelines, and regulations released in recent years *(see Table 1)* to observe the characteristics of their policies and strategies.

The United States (NARA)

The United States has developed a government electronic records management strategy based on a Presidential Memorandum—Managing Government Records—issued in 2011[59] and a Memorandum for the Heads of Executive Departments and Agencies and Independent Agencies, issued in 2012.[60] The strategy is further supported by the authorities of the Office of Management and Budget and the Office of Personnel Management, which have reinforced the provisions of the Paperwork Reduction Act and require senior agency officials to facilitate the electronic transformation of records management. Under the strategy, professional training and certification are being undertaken to ensure records managers' competencies. Important provisions that facilitate electronic records management—such as the general records schedules, the risk management self-assessment system,[61] and the electronic records archives system[62]—have been established. The reformation sets forth staged goals and priorities between 2012 and 2019, and seeks to transform government documents and records management into the backbone of a future open government.

The United Kingdom (TNA)

The United Kingdom took a series of steps from 2010 to 2013 to boost electronic records management by enacting rules, directives, principles, and publishing guidelines and handbooks for government agencies.[63] It emphasized the integration of records in the government's overall information management and sought to build a "digital continuity architecture" that serves as the intersection of business needs, values, and technical capacity. Within the architecture, documents and records serve the core function of business, and the business classification scheme is the key to Electronic Documents and Records Management System (EDRMS).[64] Senior officials are expected to lead the collaboration. More attention is now given to the internal and external environmental changes to inform effective management and self-assessment of risks and

Table 1: Public Documents of the United States, the United Kingdom, Australia, and Taiwan Used by this Study

Country	Related Policies, Guidelines, and Regulations by Time
The United States (NARA)	Presidential Memorandum—Managing Government Records (2011) Memorandum for the Heads of Executive Departments and Agencies and Independent Agencies (2012) Records Management Handbook (accessed November 2013) Records Management Initiatives (accessed November 2013) Electronic Records Management Initiative (accessed November 2013) Records Management Self-Assessment (2013) The Electronic Records Archives (accessed November 2013) Electronic Records Archives: Agency User Manual (2013) Using ERA for the FRC Annual Move: Getting Started with ERA (2013)
United Kingdom (TNA)	Business Classification Scheme Design (2003) Human Resources in Records Management (2006) Implementation Guides (2010) Information Principles (2011) Digital Continuity Project (2011) Risk Assessment Handbook (2011) Memorandum of Understanding between the Information Commissioner and the Chief Executive of the National Archives (2012) 20-Year Rule (2012) Directive on the Re-use of Public Sector Information (2013) The National Archives' Information Management Assessment Strategy 2013–15 (2013) Digital Records Infrastructure (2013) Guidance on Cloud Storage and Digital Preservation (2014)
Australia (NAA)	Australian Government Digital Transition Policy (2011) Digital Continuity (2011) Implementing an EDRMS-Key Considerations (2011) Implementing an EDRMS-Checklist (2011) A Checklist for Records Management and the Cloud (2011) Check-up 2.0 (2012) Strategic Information and Records Management (accessed October 2014) Managing Your Agency Records (accessed October 2014) Check-up Digital (2014) Digital Continuity 2020 Policy (2014)
Taiwan, ROC (TNAA)	Paper Reducing and Energy Saving Strategy by Electronic Official Documents (2010–2016) Documents and Records Information Network Integration Plan (2012–2016) Official Documents Processing Handbook (2010) Official Documents Workflow Management Operational Guideline (2010) Compilation of Archives Laws and Regulations (2010) Government Records Management Handbook (2010) Operational Guideline for Government Documents and Records Management Computerization (2010)

control. The goals of the plan are to achieve the re-use, openness, and transparency of government information.[65]

Australia (NAA)

The government digital transition policy approved by the Department of the Prime Minister and Cabinet in 2011[66] requires all Australian government agencies to reduce paper usage and to preserve digital information effectively and charges NAA with the official responsibility of leading the transition. NAA has proposed an integrated digital continuity model that highlights three focal points: the business; the people, process, and technology; and the information. The model has been adopted to help agencies to formulate their records management action plans.[67] Informed by ISO-15489 and ISO-16175, NAA has developed Check-up 2.0 and Check-up Digital as the self-assessment tools for agencies to conduct information audits.[68] The senior managers also are required to lead the change and control the risk. Furthermore, NAA emphasizes the bridging and integration of EDRMS and other business systems. It also stressess the use of metadata in documenting recordkeeping contexts and has announced it will not transfer records in paper format from 2015.[69]

Taiwan (TNAA)

Taiwan implemented the Archives Act and adopted a records management system in 2002.[70] With the transformation toward e-government and the adoption of a statutory basis for government records management, TNAA uses an advocacy strategy to advance electronic records management, such as instructing the agencies on the advantages of standardization and computerization in records management, an integrated interagency catalog for fuller access, and technical support and services for agencies' long-term electronic records preservation.[71] In a recent government restructuring, TNAA further became the single authority for electronic documents, records, and archives.[72] It now incorporates government-wide initiatives on energy saving, paper reduction, and effective use of information technologies into its management of government documents, records, and archives. An online document approval system and workflow has also been established to facilitate the streamlining of work processes,[73] and TNAA has established an official EDRMS validation and certification service[74] to guide the commercial development of EDRMS systems and facilitate standardization of records management among agencies.

Based on these national practices, the characteristics of governmental recordkeeping in modern countries include

- Government-wide initiatives: All four countries studied initiated electronic records management in a top-down fashion, that is, from the president, the prime minister, or the executive *yuan,* and the scope of the initiatives was government-wide. The initiatives were reinforced through authorities in the areas of budgeting, human resources, information technologies, and records and archives management, and they were also implemented with other partnering stakeholders. They were often connected to other policy goals such as advancing government information management, paper reduction, and government transparency.

- Integrating agency businesses with recordkeeping requirements: All of the countries strove to integrate agency operations and records management. They sought to develop complete workflows for managing documents, records, and archives. The effort comes down to the incorporation of the records management system in the overall organizational information governance architecture and the integration of the management of records created in different media and formats.
- Shaping and transforming recordkeeping practices via management tools: The case study countries all employed certain management tools, such as metadata, business classification schemes, record schedules, and review plans, to facilitate the desired processes and outcomes. The design of the tools often reflected the multiple goals of documenting organizational contexts, serving archival values, enhancing management effectiveness, and accessibility. Due to the accelerating technological obsolescence of electronic records, laws and regulations were also adjusted to shorten the number of records transfer years, and the control of records scheduling and transfer were constantly monitored in online systems.
- Emphasizing staff training for successful transition: Most of the countries charged senior managers with the responsibility to lead the transformation of records management. Records management knowledge and skills are now deemed basic requirements for all government staff, and each agency is required to provide related training.
- Employing the concept of risk management and control: Most of the countries stressed the relationships between records management and constant environment changes, and required recordkeeping professionals to develop plans for better risk management and control.

Summary of Current Archival Theories and Practices

Synthesizing the analysis of the major archival theories and models, international standards, guidelines, and practices of the four countries, this study identifies the most prominent values and ideologies in the archival community in the information age. Each is discussed below.

Shifting Focus in Records Management
As governments go electronic, a growing proportion of documents and records is created in electronic format. In response, modern records management theories and practices have begun to shift focus to the records' conception stage to manage them from the very beginning of the process. At the same time, due to the volatility and technological obsolescence of records, long-term preservation issues in the records maintenance stage also have received attention.

Emphasizing Record Context and Archival Value
Current theories and practices highlight the documentation of records' contexts that give the recorded information meaning, thus influencing the perceived archival value of records. The macro-appraisal perspective is now incorporated into the traditionally

more content-based micro-appraisal practices, and assessment of a record's value is closely tied to its origination and use.

Replacing Phased Management with Whole-Process Management

Phased management as manifested in traditional life-cycle models and practices is considered problematic and harmful to electronic records. Current records management theories and practices have come to adopt the whole-process view that integrates the management of documents, records, and archives regardless of medium and format. Furthermore, integrated management constitutes a significant part of the information governance architecture for governments.

Managing Archival Processes Rather than Managing Objects

Due to the diversity and complexity of modern records, current theories and practices have shifted focus from managing records as static objects to managing the very dynamic and continuous processes of recordkeeping activities. Records management is now embedded in interactive and multidirectional organizational relationships. Risk assessment and control for appropriate record retention have become important elements in records management.

Expanding Public Access to Records

In response to calls for open government and information freedom, the focus of records management also has shifted from the custody of records to providing public access. Access to records and archives is now viewed as a symbol of government transparency. Modern theories and practices must acknowledge changing expectations and transform management procedures accordingly.

Proposing a New Model: I^2 DRA

None of the currently popular models, including the life-cycle and record continuum models, fully reflect the aforementioned characteristics as manifested in modern national practices. As such, this study proposes a model called "Interactive and Integrated Model for the Management of Documents, Records, and Archives (I^2 DRA)." I^2 DRA is composed of the cycle of records management processes (Conception-Creation-Maintenance-Access, or CCMA), which is situated in a matrix of archival value enacting relationships that consist of social context, organizational functions, business activities, and individual identity (SOBI). CCMA and SOBI interact continuously with each other (see Figure 4), and the formula is shown in Figure 5.

CCMA: The Cycle of the Core Records Management Processes

Conception
The conception element of the CCMA cycle involves four issues that significantly influence the gestation of records: value identification, evidence accountability, access assurance, and system requirements (see Figure 6). By delineating tasks and
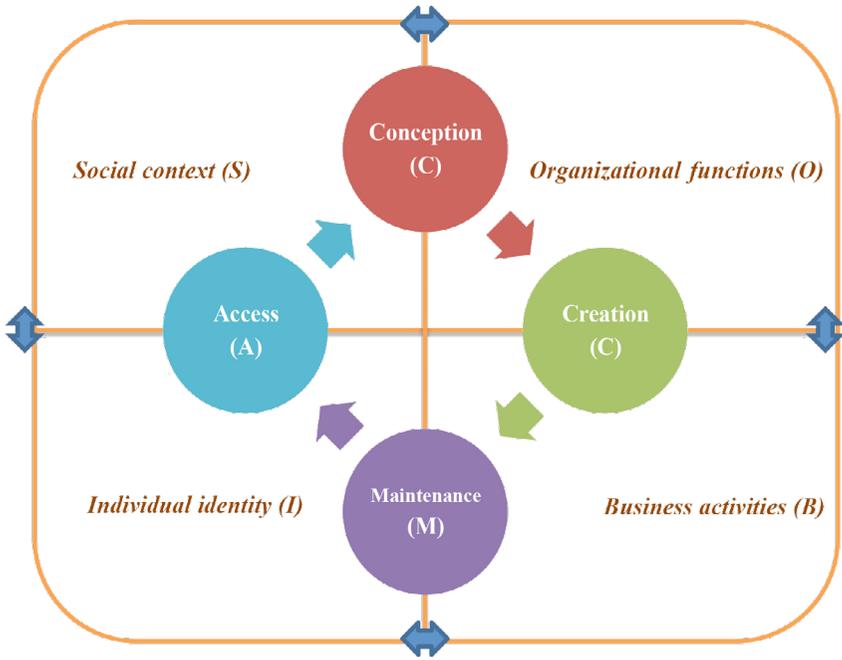
Figure 4: The Interactive and Integrated Model for the Management of Documents, Records, and Archives (I² DRA)
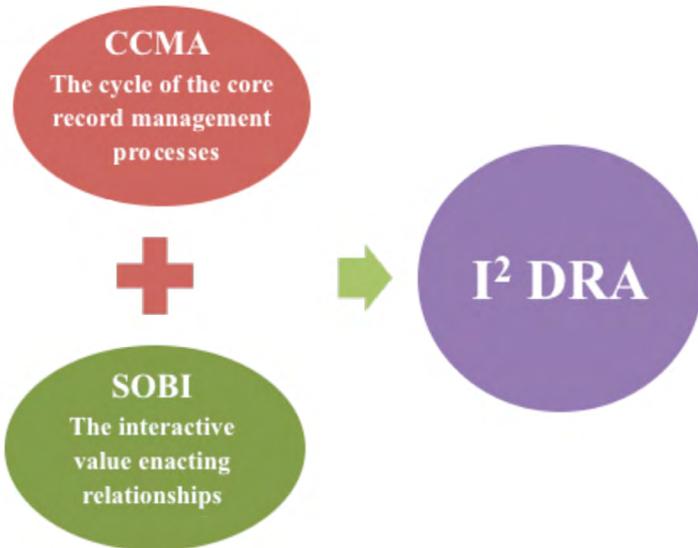
Figure 5: The I² DRA Formula
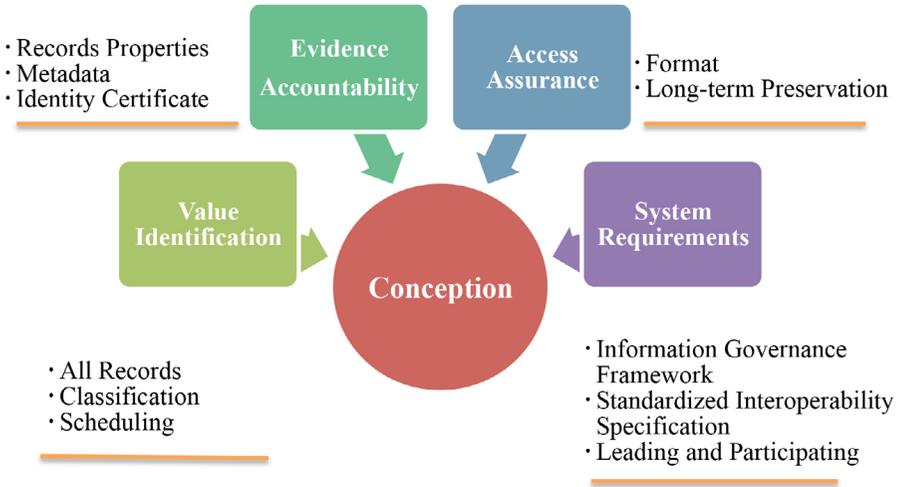
Figure 6: The Conception Element of I² DRA

responsibilities related to these four issues, this model incorporates the system design requirement of ICA's ELC and the value identification, evidence accountability, and access assurance from ICA-Req and ISO-16175.

Value identification: The conception of records starts with archival value identification that is influenced by social context and organization functions. It also emphasizes managing the totality of records rather than managing specific processes or records created from a specific system. Value identification work requires the development of a business classification scheme and a records scheduling plan for systematic value judgment at the macro and meso levels.

Evidence accountability: The creation of records is often mandated by legal authorities, that is, laws and regulations. Government staffers are obligated to ensure the authenticity and integrity of a record in terms of its content, context, and structure. All formats of records must be created as reliable evidence and in accessible media for public access. Fully specified records properties, metadata provisions, and identity certificates for staffers involved in the processing of the records are tools that help enhance accountability of records.

Access assurance: The shortening computer life cycle threatens access to electronic records. As such, the assurance of permanent access must be considered prior to the creation of records. This model incorporates the requirements of international standards and the approaches of NARA, TNA, and NAA and emphasizes the determination of the preservation format especially for electronic records in the conception stage.

System requirements: Specifying the system requirements for effective recordkeeping is the current trend in international archival standards and practices. This element

emphasizes the analyses of recordkeeping needs of government agencies, interfaces that connect different authorities, and effective leadership that facilitates the system's work. As such, the major provisions that highlight this element include an integrated information governance structure, interoperable system specifications, and a network of stakeholders and collaborators.

Creation

The business activities of government agencies are shaped by social contexts, organizational tasks, and government employees' work roles. Records representing government business activities are created and captured via an integrated system or a web of recordkeeping systems across agencies to form the organizational and national memory. The main concern of this process is to integrate recordkeeping with the business activities of government agencies and to effectively differentiate records of varying retention values at the stage of creation. While the retention value will be appraised from a three-layered perspective—the record's value from the micro, meso, and macro perspectives—the ultimate goal is to serve the entire nation's memory.

The creation of records involves six issues (see Figure 7):
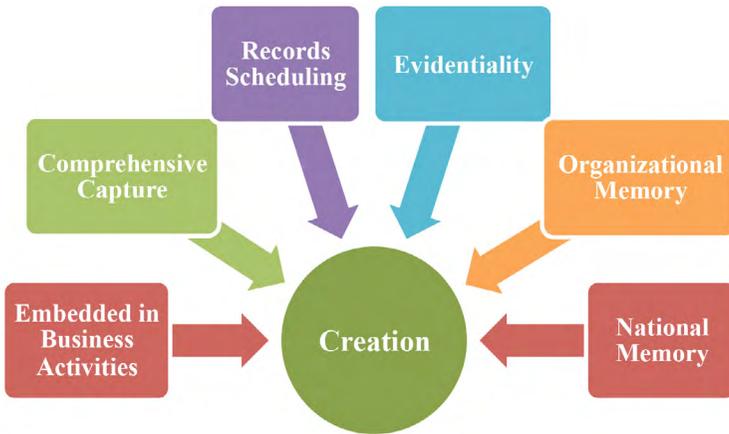
Figure 7: The Creation Element of I² DRA

Embedding in business activities: To serve the purposes of recordkeeping, record creation should be embedded in organizational businesses and should reflect the interactions of individual and business activities, organizational functions, and social context. Records should be a mandated output of business activities, and requirements must be placed on records to ensure their accuracy and accountability.

Comprehensive capture: Viewed holistically, a thorough capture plan must be enforced to ensure that records created from a single or multiple records management systems will be fully captured via appropriately designed interfaces to form a comprehensive collection.

Records scheduling: To manage records of varying retention needs effectively, a records scheduling plan must be in place. At the time of creation, each record is assigned an appropriate retention period based on the schedule so subsequent records maintenance and disposition will become systematic and effective.

Evidentiality: Government records serve administrative and legal purposes. Record requirements must be established to safeguard the authenticity, integrity, and completeness of records so as to ensure their evidentiality.

Organizational memory: Based on the previous provisions, organizational records that are sound in nature, well scheduled, and comprehensively captured will accumulate and form a reliable and accountable organizational memory.

National memory: National memory relies on the accumulation of records from government, organizations, civil society, and individuals. Comprehensive collections of government and organization memories directly benefit the formation of national memory.

Maintenance

The maintenance element echoes the record treatment emphases in the records continuum and life-cycle models, but I^2 DRA does not conceptualize maintenance as the final phase of the records management process as in ELC. Furthermore, the risk management concern as manifested in NARA's, TNA's, and NAA's practices was incorporated in this element.

As such, the maintenance element involves strategies for managing records of various retention periods, media formats, material conditions (i.e., records of different materiality and vulnerability to deterioration), and access needs (i.e., record retrieval by government staff and citizens and the maintenance required to reduce record damage and deterioration). Risk assessment and management should be conducted and must permeate the entire maintenance element to ensure the overarching maintenance plan is safe and sound (see Figure 8).

Access

The concept and importance of access have not been emphasized enough in the records continuum and life-cycle models. They were only implied in the records continuum, and the ICA's ELC includes them in the maintenance phase. In response to the call for government transparency and open government, the I^2 DRA specifically conceptualizes access as a major component in the management of government documents, records, and archives. Five issues are associated with this element (see Figure 9):

Promoting information openness: Information freedom and equal access are two prominent values in modern archival theories. Access to government records should be viewed as active communication between a government and the public. Open records support government transparency and open governance.[75] The inclusion of and emphasis on access in the model addresses what is lacking in the current popular models.
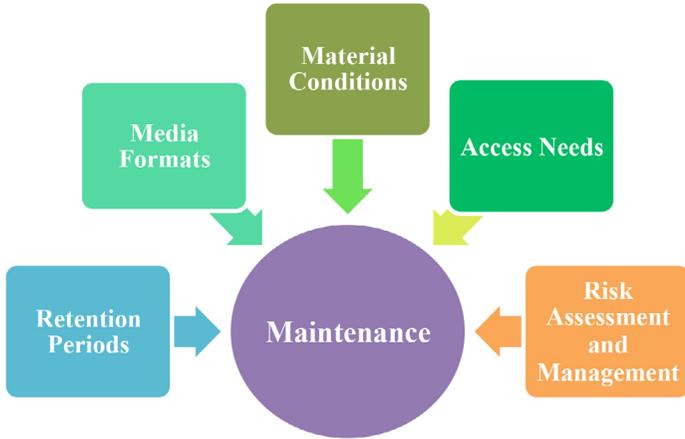
- Ensure full access to all records during their retention periods.
- Facilitate permanent access to records of enduring value.

Figure 8: The Maintenance Element of I² DRA
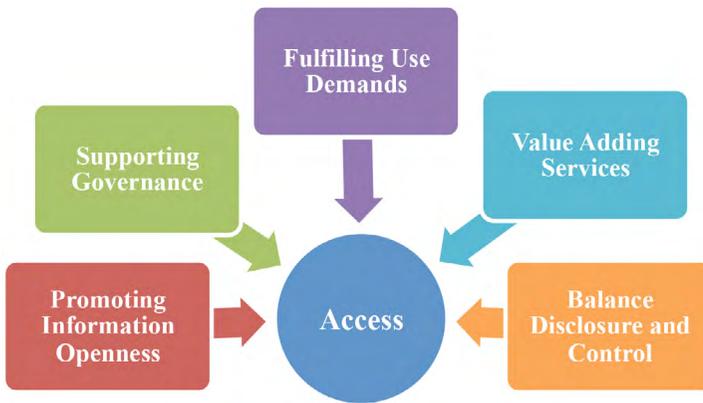
Figure 9: The Access Element of I² DRA

Supporting governance: Because part of the value of records stems from their support of governance, the access element further emphasizes that the goal of recordkeeping and records maintenance is to support better decision making by government agencies.

Fulfilling use demands: The access element core emphasizes the use of records by users from inside and outside an agency. To facilitate open and effective use of records, the model emphasizes the development of user-friendly access approaches and access tools.

Value-adding services: This refers to the promotion of records used for research and democratic governance purposes to generate knowledge and other forms of output beneficial to society. In return, value-adding services will further reinforce the openness and use of records by citizens.

Balance disclosure and restriction: While access to government records is now deemed a right that needs protection in a democratic society, government records contain diverse and complex information, including business secrets or otherwise confidential, sensitive, or private data. The need to balance information disclosure and information restriction to protect organizations and individuals presents challenges to modern government records management. This concern should influence the conception of records, so that record-generating agencies and their staffs produce records that meet business and public needs but, at the same time, place appropriate safeguards on records for which public access needs to be limited.

SOBI: The Interactive Value Matrix Surrounding Records Management

The CCMA cycle in the I^2 DRA model is grounded in an interactive web of value relationships called SOBI, which refers to four sources that influence and shape the value of government records: social context, organizational functions, business activities, and individual identity. These four sources of influence interact with each other and form a matrix of value relations. Influenced by the records continuum model, I^2 DRA also conceptualizes the matrix of SOBI as situated in the time-space continuum, so the CCMA activities must take into account past, present, and future records management conditions to derive workable and sustainable management strategies (see Figure 10).
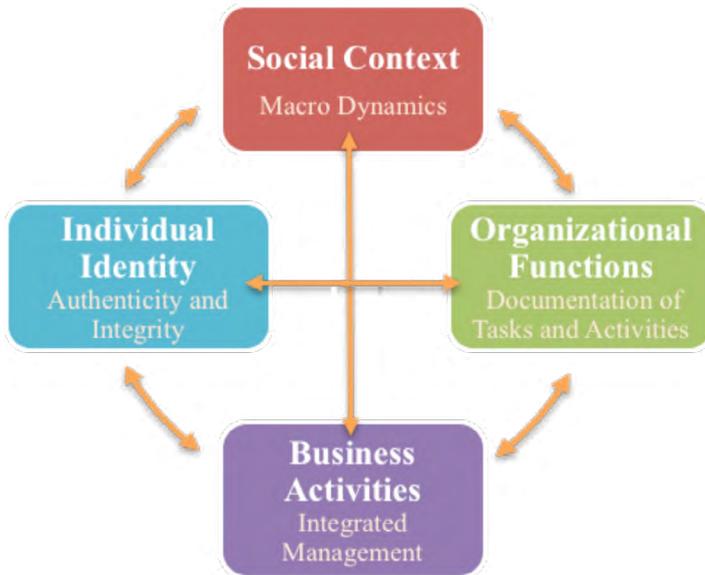
Figure 10: SOBI: The Value Relations Matrix Surrounding CCMA

Social Context

Social context refers to the social institutions of the past, present, and future. It influences how we perceive the government's organizational functions, business activities, and individual identity. It is also a dynamic process shaped by the interaction of the other three sources of influence. In short, the value of records and recordkeeping activities is recognizable only when it is regarded in the social context.

Organizational Functions

Organizational functions are the missions and purposes for which an organization is founded. Organizational functions are authorized in a specific social context, and the ongoing business activities and working individuals will shape how the functions actually manifest in practice. Records as a whole should strive to reflect organizational functions regardless of recordkeeping methods, media, and formats.

Business Activities

Business activities are the observable practices and actions that occur within the social context and in reaction to organizational functions. Business activities are carried out by individual staffers, and the conglomerate of records generated from those individuals' work processes forms the collective trace of an agency's business activities. Today, modern governments employ diverse and complicated e-government systems and tools for different streams of business activities; records generated from electronic and manual systems must be carefully audited and integrated to produce a holistic record that fully captures an agency's business activities.

Individual Identity

Individual identity refers to each government employee's work role in creating and keeping accountable records. Entrusted with legal or administrative authorities, each government staffer is responsible for documenting his or her business activities. In reverse, the agency of individual workers may reciprocally shape business activities and organizational functions and redefine what needs to be recorded. Working individuals are also the key to the authenticity and integrity of records. Awareness of recordkeeping duties and their significance by each worker deeply influences the effectiveness and outcome of an agency's records management. Continuous training and monitoring are required to ensure recordkeeping success at the individual level.

The Contribution of the I² DRA Model

The I² DRA model views records as logical entities, and it takes into account the varying nature and properties of documents, records, and archives in different media. It incorporates ideas from the life-cycle and records continuum models and addresses the weaknesses of those models by examining and comparing the national practices at NARA, TNA, NAA, and TNAA, thus reconceptualizing records management processes. The contributions of this model include the following.

Integrating the Management of Documents, Records, and Archives in One Model

One major controversy in national records and archives management is that existing popular models, like life-cycle thinking, tend to treat the management of records and archives as two interrelated but separate realms. Viewing records as physical objects further hinders the holistic and integrated management of records that come from different sources, are generated by different processes, and are presented in different formats. By conceptualizing records as logical entities, the I^2 DRA model brings together the management of documents, records, and archives under the same model and envisions a multilayered framework for recordkeeping and record access.

Replacing the Linear and Phased View with Reciprocal Relations between Records Management Processes

One major criticism of the life-cycle model is that it envisions records management as a linear and one-way process with different phases. I^2 DRA, in contrast, conceptualizes the records management process as comprising four interactive elements embedded in four sources of influences that shape the perceived value of records and recordkeeping decisions. The elements and the sources of influences interact multidirectionally, and they constitute a dynamic and continuous management cycle for safeguarding valuable government records.

Incorporating Evidentiality in System Requirements to Form a Safe and Sound Information Governance Architecture

Although ICA's ELC model emphasizes the roles of records management systems in record conception and the functional requirements needed to support effective records management, it does not address evidentiality issues in system design. The I^2 DRA model addresses this problem by arguing that system requirements should also incorporate measures that ensure records' accountability, evidentiality, and effective access. It regards the systems as manifestations of records management standards and policies, and provides for the working systems together to form a safe and sound information governance architecture that serves recordkeeping purposes.

Comprehensive Capture of Records from All Business Activities

The I^2 DRA model envisions the value of records as residing in their support for business activities. Similar to the records continuum model, it recognizes that government units at different levels have different business goals and activities. The model allows for multilayered management serving micro-, meso-, and macro-level concerns. It also emphasizes the holistic management of records of all types to build the collective memory.

Incorporating Risk Management Concepts in the Model

Unlike the previous models, which ignore risk management, the I^2 DRA model specifically stresses the inclusion of risk management strategies. The proliferation of electronic records has increased the threats of record volatility and vulnerability. Risk management measures should be in place to ensure that records in various formats

will be kept safe for access during their retention periods. Risk assessment must take place in the conception stage, and risk management strategies must also reflect different retention periods and long-term preservation needs to generate a manageable and sustainable records collection in the first place.

Highlighting Access in the Model to Promote Information Openness

Existing archival theories place greater emphasis on the custody role and less on the communication functions of records. The archival community began paying attention to record access in the mid-twentieth century,[76] but it was not incorporated into previous popular models. Due to the growing emphasis on information freedom and open government, the I² DRA model includes access as one of its core elements to address modern governments' obligations to strike a proper balance between offering record access, protecting sensitive and private information, and achieving open and transparent information disclosure.

Embedding Records Management in Context

The life-cycle model is often criticized as failing to give due consideration to the macro social contexts in which records and archives operate. The I² DRA model follows the new paradigm theories and embeds the records management processes in context, using four sources of influence (SOBI) to indicate the interweaving and interactive contextual influences that shape the values of records and archives.

Bridging the Gaps between Existing Models

The I² DRA model was proposed in response to the current advantages and shortcomings of the life-cycle and records continuum models. It improves the long-criticized conceptualization of phased processes and detachment from social context in life-cycle thinking. It also simplifies the rather complicated records continuum model and explicates the records management processes that were absent in the model. It was stimulated by emerging challenges posed by electronic records, but the model itself regards the management of documents, records, and archives of all forms as a totality. Such an interactive and dynamic model should be a sound basis for developing the infrastructure for government records and archival management.

To apply the I² DRA model, this study recommends that national authorities in charge of government records management should examine the existing regulations, guidelines, policies, systems functions, and staff capabilities that constitute overall governmental recordkeeping practices. Specifically, records management authorities may need to redefine the scope and value of records, and reassign records management responsibilities. Facilitating provisions and tools—such as classification schemes, records scheduling, metadata elements, and identity certificates—must be established to achieve the goals of the whole management process. Attention should be paid to information governance architecture, system requirements, file formats, and long-term preservation techniques. Further, information openness and value-adding services channels, as well as evaluation and staff training programs, should be developed to maximize the usefulness of government records. Senior managers should be engaged in the transition process to fully realize interorganizational cooperation,

system interoperability, integration of risk management, and application of innovative information technologies such as online sharing systems and the cloud platform. The transition should address the changing mindsets of records creators and managers to assure long-term accountability and evidentiality through sound and reliable recordkeeping practices to cultivate a holistic collective memory at the organizational, national, and societal levels.

Conclusion

To sum up, the I^2 DRA model integrates the valuable concepts of the life-cycle and records continuum models and serves as a theoretical and practical model for records management in modern governments. The model was developed on the basis of a critical reading of existing archival theories, international guidelines, and a comparative analysis of four countries' national records management practices. National records management agencies may consider adopting the I^2 DRA model in the integrated management of documents, records, and archives by reforming their policies, processes, regulations, system, technologies, architectures, evaluations, training, and so forth. Hopefully, more records management professionals and archivists from all over the world will share experiences and comments on the model to improve its applicability. Together, such efforts will ensure a bright future of permanent and open government archival information access.

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NOTES

1. Terry Cook and Joan M. Schwartz, "Archives, Records, and Power: From (Postmodern) Theory to (Archival) Performance," *Archival Science* 2, nos. 3–4 (2002): 171–85.
2. Michael Buckland, "On the Nature of Records Management Theory," *The American Archivist* 57, no. 2 (1994): 346–51.
3. James Lappin, "What Will Be the Next Records Management Orthodoxy?," *Records Management Journal* 20, no. 3 (2010): 252–64, accessed February 21, 2013, doi:10.1108/09565691011095283.
4. Frederick J. Stielow, "Archival Theory Redux and Redeemed: Definition and Context toward a General Theory," *The American Archivist* 54, no. 1 (1991): 14–26.

5. Philip Coolidge Brooks, "The Selection of Records for Preservation," *The American Archivist* 3, no. 4 (1940): 221–34.

6. Frank Upward, "Structuring the Records Continuum, Part One: Post-Custodial Principles and Properties," *Archives and Manuscripts* 24, no. 2 (1996): 268–85, accessed July 8, 2011, Monash University, www.infotech.monash.edu.au/research/groups/rcrg/publications/recordscontinuum-fupp1.html; and Frank Upward, "Structuring the Records Continuum, Part Two: Structuration Theory and Recordkeeping," *Archives and Manuscripts* 25, no. 1 (1997): 10–35, accessed July 8, 2011, Monash University, www.infotech.monash.edu.au/research/groups/rcrg/publications/recordscontinuum-fupp2.html.

7. Philip C. Bantin, "Strategies for Managing Electronic Records: A New Archival Paradigm? An Affirmation of Our Archival Traditions?," *Archival Issues* 23, no. 1 (1998): 1–22; Xiaomi An, "An Integrated Approach to Records Management," *Information Management Journal* 37, no. 4 (2003): 24–30; and Chi-Shiou Lin, "Records Continuum: An Emerging Recordkeeping Theory," *Journal of Library and Information Studies* 5, nos. 1–2 (2007): 107–37.

8. "ISO-15489-1:2001 Information and Documentation—Records Management—Part 1: General," International Organization for Standardization (ISO), accessed September 19, 2012, www.iso.org/iso/catalogue_detail?csnumber=31908; and "ISO/TR 15489-2:2001 Information and Documentation—Records Management—Part 2: Guidelines," International Organization for Standardization (ISO)," accessed September 19, 2012, www.iso.org/iso/catalogue_detail.htm?csnumber=35845.

9. International Organization for Standardization (ISO), "ISO-16175-1:2010 Information and Documentation—Principles and Functional Requirements for Records in Electronic Office Environments—Part 1: Overview and Statement of Principles," accessed November 7, 2013, www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=55790; International Organization for Standardization (ISO), "ISO-16175-3:2010 Information and Documentation—Principles and Functional Requirements for Records in Electronic Office Environments—Part 3: Guidelines and Functional Requirements for Records in Business Systems," accessed November 7, 2013, www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=55792; and International Organization for Standardization (ISO), "ISO-16175-2:2011 Information and Documentation—Principles and Functional Requirements for Records in Electronic Office Environments—Part 2: Guidelines and Functional Requirements for Digital Records Management Systems," accessed November 7, 2013, www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=55791.

10. National Archives Administration, National Development Council, Taiwan, ROC (TNAA), "Documents and Records' Laws and Regulations," accessed December 30, 2013, www.archives.gov.tw/english/MenuList.aspx?cnid=49 ; and Richard Pearce-Moses, *A Glossary of Archival and Records Terminology*, s.v. "document" (Chicago: Society of American Archivists, 2005), 126–28, accessed November 16, 2014, files.archivists.org/pubs/free/SAA-Glossary-2005.pdf.

11. Ibid., s.v. "record," 326–30.

12. Ibid., s.v. "archives," 29–30.

13. Ibid., s.v. "electronic record," 141–42.

14. Stielow, "Archival Theory Redux and Redeemed," 17.

15. Terry Abraham, "Oliver W. H. Revisited: Levels of Arrangement and Description in Practice," *The American Archivist* 54, no. 3 (1991): 370–77.

16. Buckland, "On the Nature of Records Management Theory," 346–51.

17. Margaret Hedstrom, "Understanding Electronic Incunabula: A Framework for Research on Electronic Records," *The American Archivist* 54, no. 3 (1991): 334–54.

18. Cook and Schwartz, "Archives, Records, and Power," 171–85.

19. Catherine Bailey, "Archival Theory and ElectronicRrecords," *Archivaria* 29 (1989–1990): 180–96; and Luciana Duranti, "Concepts, Principles, and Methods for the Management of Electronic Records," *The Information Society: An International Journal* 17, no. 4 (2001): 271–79.

20. Hedstrom, "Understanding Electronic Incunabula," 334–54; Frederick J. Stielow, "Archival Theory and the Preservation of Electronic Media: Opportunities and Standards below the Cutting Edge," *The American Archivist* 55, no. 2 (1992): 332–43; David A. Bearman, "Diplomatics, Weberian Bureaucracy, and the Management of Electronic Records in Europe and America," *The American Archivist* 55, no. 1 (1992): 168–81; Richard James Cox, "Archivists, Electronic Records, and the Modern Information Age: Re-Examining Archival Institutions and Education in the United States, with Special Attention to State Archives and State Archivists" (PhD diss., University of Michigan, 1992); Terry Cook, "Electronic Records, Paper Minds: The Revolution in Information Management

and Archives in the Post-Custodial and Post-Modernist Era," *Archives and Manuscripts*, no. 22 (1994): 300–328; Linda J. Henry, "Schellenberg in Cyberspace," *The American Archivist* 61 (1998): 309–27; David A. Bearman and Margaret Hedstrom, "Reinventing Archives for Electronic Records: Alternative Service Delivery Options," in *Electronic Records Management Program Strategies, Archives and Museum Informatics Technical Report*, no. 18, ed. Margaret Hedstrom (Pittsburgh: Archives and Museum Informatics, 1993), 82–98; and Lappin, "Next Records Management Orthodoxy," 252–64.

21. Bailey, "Archival Theory," 180–96.
22. Upward, "Post-Custodial Principles and Properties," 268–85; and Upward, "Structuration Theory and Recordkeeping," 10–35.
23. Cook, "Electronic Records, Paper Minds," 300–328.
24. Bearman and Hedstrom, "Reinventing Archives," 82–98.
25. Henry, "Schellenberg in Cyberspace," 309–27.
26. Ibid.
27. Brooks, "Current Aspects of Records Administration: The Archivist's Concern in Records Administration," *The American Archivist* 6, no. 3 (1943): 158–64.
28. Brooks, "The Selection of Records," 221–34.
29. Brooks, "Current Aspects of Records Administration," 158–64.
30. Philip C. Bantin, "Strategies for Managing Electronic Records: A New Archival Paradigm? An Affirmation of Our Archival Traditions?," *Archival Issues* 23, no. 1 (1998): 1–22.
31. Z. M. Yusof and R. W. Cheli, "The Records Life Cycle: An Inadequate Concept for Technology-Generated Records," *Information Development* 16, no. 3 (2000): 135–41.
32. Jay Atherton, "From Life Cycle to Continuum: Some Thoughts on the Records Management-Archives Relationship," *Archivaria* 21 (1985–1986): 43–51.
33. Sue McKemmish, "Yesterday, Today, and Tomorrow: A Continuum of Responsibility," in *Proceedings of the Records Management Association of Australia 14th National Convention, 15–17 September 1997* (Perth: RMAA 1997), accessed November 20, 2011, Monash University, www.sims.monash.edu.au/research/rcrg/publications/recordscontinuum/smckp2.html.
34. Bantin, "Strategies for Managing Electronic Records," 1–22.
35. Lin, "Records Continuum," 107–37.
36. Atherton, "From Life Cycle to Continuum," 43–51; and McKemmish, "Placing Records Continuum," 333–59.
37. International Council on Archives (ICA), *Guide for Managing Electronic Records from an Archival Perspective* (Paris: ICA, Committee on Electronic Records, 1997), accessed December 9, 2011, www.ica.org/10824/studies-and-case-studies/ica-study-n8-guide-for-managing-electronic-records-from-an-archival-perspective.html; and ICA, *Electronic Records: A Workbook for Archivists* (Paris: ICA, Committee on Current Records in an Electronic Environment, 2005), accessed December 9, 2011, www.ica.org/10801/studies-and-case-studies/ica-study-n16-electronic-records-a-workbook-for-archivists.html.
38. ICA, *Guide for Managing Electronic Records,* chapter 3.
39. Upward, "Structuring the Records Continuum."
40. Ibid.
41. Ibid.
42. Ibid; and McKemmish, "Placing Records Continuum."
43. McKemmish, "Placing Records Continuum."
44. Bantin, "Strategies for Managing Electronic Records," 1–22.
45. Bearman and Hedstrom, "Reinventing Archives," 82–98.
46. Henry, "Schellenberg in Cyberspace," 309–27.
47. Duranti, "Concepts, Principles, and Methods," 271–79.
48. Terry Cook, "Archival Science and Postmodernism: New Formulations for Old Concepts," *Archival Science* 1, no. 1 (2001): 3–24; and Terry Cook, "Macro-Appraisal and Functional Analysis: Documenting Governance Rather than Government," *Journal of the Society of Archivists* 25, no. 1 (2004): 5–18.
49. John Ridener, *From Polders to Postmodernism: A Concise History of Archival Theory* (Duluth, MN: Litwin Books, LLC, 2009).
50. Lappin, "Next Records Management Orthodoxy," 252–64.
51. Bantin, "Strategies for Managing Electronic Records," 1–22.

52. McKemmish quoted by Upward in "Yesterday, Today, and Tomorrow"; and Upward, "Structuration Theory and Recordkeeping."

53. Buckland, "On the Nature of Records Management Theory," 346–51; Bearman and Hedstrom, "Reinventing Archives," 82–98; Henry, "Schellenberg in Cyberspace," 309–27; Lappin, "Next Records Management Orthodoxy," 252–64; Bailey, "Archival Theory," 180–96; and Lin, "Records Continuum," 107–37.

54. ICA, *Guide for Managing Electronic Records*; ICA, *Electronic Records*; and ICA and ADRI, *ICA-Req.*

55. ICA, *Guide for Managing Electronic Records.*

56. ICA, *Electronic Records.*

57. ICA and ADRI, *ICA-Req.*

58. ICA, *Guide for Managing Electronic Records*, 24–27.

59. The White House, Office of the Press Secretary, USA, "Presidential Memorandum—Managing Government Records," signed November 28, 2011, accessed November 17, 2013, www.whitehouse .gov/the-press-office/2011/11/28/presidential-memorandum-managing-government-records.

60. The Executive Office of the President, OMB, and NARA, USA, "Memorandum for the Heads of Executive Departments and Agencies and Independent Agencies," signed August 24,2012, accessed November 17, 2013, www.whitehouse.gov/sites/default/files/omb/memoranda/2012/m-12-18.pdf.

61. NARA, Records Managers, "Records Management Self-Assessment," accessed November 22, 2013, www.archives.gov/records-mgmt/resources/self-assessment.html.

62. NARA, Records Managers, "Electronic Records Archives," accessed November 18, 2013, www.archives.gov/records-mgmt/era.

63. HM Government, "Information Principles," December 2011, accessed December 15, 2013, www.gov.uk/government/uploads/system/uploads/attachment_data/file/266284/Information_ Principles_UK_Public_Sector_final.pdf; "Memorandum of Understanding between the Information Commissioner and the Chief Executive of the National Archives," signed July 17, 2012, accessed February 26, 2014, www.nationalarchives.gov.uk/documents/information-management/mou-as-signed-18-july-2012.pdf; TNA, "Understanding Digital Continuity," 2011, accessed December 17, 2013, www.nationalarchives.gov.uk/documents/information-management/understanding-digital-continuity.pdf; TNA, "Managing Digital Continuity," 2011, accessed January 29, 2012, www.nationalarchives.gov.uk/documents/information-management/managing-digital-continuity.pdf; and TNA, "Risk Assessment Handbook," 2011, accessed January 18, 2014, www .nationalarchives.gov.uk/documents/information-management/Risk-Assessment-Handbook.pdf.

64. TNA, "Business Classification Scheme Design," 2003, accessed November 25, 2012, 193.132.104.74/ documents/information-management/bcs_toolkit.pdf.

65. TNA, "Introductory Guide to the Amended PSI Directive," 2013, accessed February 26, 2014, www.nationalarchives.gov.uk/documents/information-management/psi-directive-transposition-intro-guide.pdf; and TNA, "20-Year Rule," 2012, accessed January 20, 2014, www.nationalarchives.gov .uk/about/20-year-rule.htm.

66. National Archives of Australia (NAA), "Australian Government Digital Transition Policy," updated July 2014, accessed November 15, 2014, www.naa.gov.au/records-management/digital-transition-and-digital-continuity/digital-transition-policy.

67. NAA, "Digital Transition and Digital Continuity," 2011, accessed November 15, 2014, www.naa.gov.au/records-management/digital-transition-and-digital-continuity/index.aspx.

68. NAA, "Check-up 2.0," 2012, accessed January 29, 2012, www.naa.gov.au/records-manage-ment/check-up/index.aspx; and NAA, "Check-up Digital," accessed November 15, 2014, www.naa.gov.au/records-management/check-up/index.aspx.

69. NAA, "Implementing an EDRMS-key Considerations," 2011, accessed January 29, 2012, www.naa.gov.au/Images/EDRMS-key-considerations_tcm16-47289.pdf; and NAA, "Implement-ing an EDRMS-Checklist," 2011, accessed January 29, 2012, www.naa.gov.au/Images/EDRMS-checklist_tcm16-47244.pdf.

70. TNAA, "Laws," accessed December 30, 2013, www.archives.gov.tw/english/MenuList .aspx?cnid=49; and "Documents and Records' Laws and Regulations," National Archives Admin-istration, National Development Council, Taiwan, ROC (TNAA), accessed December 30, 2013, www.archives.gov.tw/english/Publish.aspx?cnid=404&p=333.

71. "e-Records," TNAA, accessed December 30, 2013, www.archives.gov.tw/english/MenuList .aspx?cnid=43.

72. TNAA, "Organization Act," accessed on December 30, 2013, www.archives.gov.tw/english/Publish .aspx?cnid=1156; and TNAA, "e-Records," accessed December 30, 2013, www.archives.gov.tw/ english/MenuList.aspx?cnid=43.

73. TNAA, "Operational Guideline for Government Records Management Computerization," last modified December 15, 2010, accessed November 16, 2014, www.archives.gov.tw/Publish .aspx?cnid=1636&p=1508 (Chinese only).

74. TNAA, "RMS Validation," last modified September 9, 2011, accessed November 16, 2014, www.archives.gov.tw/english/Publish.aspx?cnid=964.

75. Trudy Huskamp Peterson, "The National Archives and the Archival Theorist Revisited, 1954–1984," *The American Archivist* 49, no. 2 (1986): 125–33.

76. Ibid.