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Electronic Recordkeeping

Models for Action: Developing Practical Approaches to Electronic Records Management and Preservation

by **Alan Kowlowitz and Kristine Kelly**

Many organizations are taking advantage of new technologies to conduct an increasing amount of their business electronically over networks. Many are implementing technologies such as electronic data interchange (EDI), digital imaging, geographic information systems (GIS) and groupware to support paperless transactions. These technological changes are having a substantial impact on organizational abilities to create, manage and use records to support legal responsibilities and business needs.

Organizations often lack adequate tools to manage the growing number and variety of electronic records. Some are in danger of losing access to records stored in personal computers, e-mail boxes or personal local area network (LAN) directories. Others face the problem of linking documents created in different forms and formats to business transactions. Many organizations are finding that their electronic records do not meet their organization's evidentiary needs.

From an archival perspective, which focuses on long-term societal and organizational needs, this means that electronic records of enduring value may be lost. Perhaps more importantly, organizations are finding that their electronic records are not sufficient to support the ongoing needs of business processes. In many cases, redundant paper systems must be maintained or substantial additional resources must be expended in order to address records management requirements after information systems have been implemented. Electronic records management requirements must therefore be addressed at the system design stage and not after-the-fact, as an isolated additional activity. Therefore, organizations need immediate and specific solutions and tools that will help them integrate electronic records management requirements into their applications and business processes.

The Models for Action Project

The Models for Action Project, funded in part by the National Historical Publications and Records Commission (NHPRC), is focused on the development of these types of practical tools. The project is being conducted by the Center for Technology in Government (CTG) at the University at the Albany, in partnership with the New York State Archives and Records Administration. The project seeks to develop and promote practical tools that will assist organizations, particularly state and local government agencies, in addressing electronic records

management and archival requirements as they develop networked computing and communications applications.

The Center for Technology in Government, an Innovations in American Government award winner, forms strategic partnerships with government agencies, technology corporations and university faculty and students. CTG's mission is to solve practical problems of information and service delivery in the public sector. CTG projects focus on increasing productivity, reducing costs, increasing coordination and enhancing the quality of government operations and public services. Since its inception in 1993, three dozen high-tech companies, more than 30 government agencies and a dozen academic researchers have participated in Center projects.

The New York State Archives and Records Administration (SARA) promotes, assists and oversees responsible stewardship of state and local government records. SARA's focus is on stewardship -- making certain that state and local government records, regardless of media, are usable, efficiently managed and accessible for as long as they are needed. SARA fosters stewardship through regulation, advice, education and technical assistance and oversees agency efforts to protect and provide access to archival records. SARA is part of a larger information resource management community concerned with current and future uses of information and information technology. In partnership with other government entities and information professionals, SARA works to support the development and maintenance of sound records and information systems.

The products of the Models for Action Project are the overall tool, the Records Requirements Analysis and Implementation Tool (RRAIT), which is comprised of two parts: the Records Requirements Elicitation Component (RREC) and the Records Requirements Implementation Component (RRIC). The RREC is described in more detail below, but in short, its purpose is to facilitate the identification of records management requirements during business process improvement and systems analysis activities. The RRIC focuses on the identification of management, policy and technology strategies that address the requirements once they have been identified. Combined, the tools will facilitate the identification and implementation of application-specific records management requirements.

Theoretical Foundations

The Models for Action Project integrates and builds upon three existing bodies of knowledge: business process improvement, information systems development and electronic records management and archival requirements. The project originally intended to focus on integrating records management and archival requirements into system development methodologies in the networked environment. However, given that most effective system development is done in conjunction with business process improvement and that records management issues are fundamentally related to business process issues, not technology issues, project staff expanded the project focus to include the methodologies used by organizations to support business process improvement.

System development methodologies are primarily concerned with the implementation of new technologies, whereas business process improvement is concerned with the efficient flow of

information. In order to maximize the benefit from information system implementations, it is critical that organizations develop an understanding of current business processes and information needs and flows, so that steps that add no value to the process can be eliminated and those that do can be redesigned if necessary. These efforts should be conducted with an awareness of the technologies that can support a new process, but should not be inextricably linked to any given technology solution. Recognizing the importance of this distinction, the Models for Action focus was shifted from improving or expanding system development methodologies to the development of practical tools that integrate the identification and examination of records management activities into business process improvement models.

Functional Requirements for Electronic Records Management

One of the foundations for Models for Action was the Functional Requirements for Record keeping developed in "Variables in the Satisfaction of Archival Requirements for Electronic Records Management," a research project of the School of Library and Information Sciences at the University of Pittsburgh (Pittsburgh Project). Based on the results from the Pittsburgh project, staff began by developing a set of functional requirements for electronic records management that could subsequently be translated into sets of questions or cues that facilitate the identification of technology, management and policy strategies to meet each requirement.

Although largely based on Functional Requirements for Record keeping, the Models for Action functional requirements focused on the system level (policy, management and technology) strategies that create records rather than at the record level. The definition of a record used in the development of the functional requirements is the following: "any information received in the normal course of business and retained as evidence of organization, function, policies, decisions, procedures, operations or other activities, or because of the information contained therein." This definition is a generalized version of the legal definition of record for management and archival preservation as it appears in New York State law as well as laws in many other states. The Models for Action functional requirements were also informed and influenced by "Preservation of the Integrity of Electronic Records," a research project of the University of British Columbia; the U.S. Department of Defense Records Management Application Functional Baseline Requirements; the National Archives and Records Administration's (NARA) instructional guide for Federal agencies, Records Management Requirements for Electronic Record keeping; and the work of a number of other institutions.

The initial Models for Action Functional Requirements contained five categories of requirements, each comprised of a number of requirements and sub-requirements, and each containing a brief justification statement. The major categories are shown on the next page. The use of the term best practices refers to practices formally adopted or generally accepted by a profession or discipline. Examples of best practices include Generally Accepted Accounting Practices and American Health Information Association information and documentation recommended practices. The initial Functional Requirements document was reviewed by the project's Advisory Committee, comprised primarily of practitioners and information resource managers in public and private sector organizations in New York State. Based on feedback from the Advisory Committee, the Functional Requirements were modified and the revised version

was subsequently sent to experts in the archival and records management communities for comment.

The next step in the project was to develop a practical tool that translates the project's Functional Requirements into questions or cues that elicit application-specific records management requirements. This modified set of functional requirements was used as the basis for the development of an initial set of questions or prompts, subsequently named Records Requirements Elicitation Component (RREC) of the project's broader product the Records Requirements Analysis and Implementation Tool (RRAIT), which will also include technology, management and technology mechanisms for addressing records requirements.

While developing the RREC, it became clear that the Models for Action Functional Requirements needed substantial revisions. The process of crafting a workable tool based on the theoretical construct (the Requirements) created a synergy that helped generate very creative solutions.

The first significant change to the Functional Requirements was a redefinition of record. It was recognized that the original definition was too vague to be implementable in a practical tool. Project staff therefore decided to define record as "the complete set of documentation required to provide evidence of a business transaction." This definition is built around the concept of business transaction which provides a substantially better fit between the definition of a record and business process analysis concepts and is more likely to be understood by a wide audience. The revised definition is also similar to that recommended by United Nations Advisory Committee for Coordination of Information Systems (ACCIS) and that more recently used by the Pittsburgh Project.

A second modification to the Functional Requirements focused on the requirement category, Compliant. Insight gained in the process of developing the RECC led us to believe that compliance is not best regarded as an independent category. Rather, it is an attribute achievable through the effective identification, implementation and subsequent monitoring of the specific records management requirements associated with a business process. These specific requirements were accounted for in the remaining four categories of Functional Requirements.

A third modification was the combination of two categories of requirements - Records Maintained and Records Are Usable. Project staff found that Records Maintained contained requirements already accounted for in Records Capture. Therefore, redundant requirements were eliminated or integrated into Records Capture. The categories Records Maintained and Records Are Usable were combined to create a new category of requirement - Records Maintenance and Accessibility.

The process of developing the RREC, therefore, reduced the number of categories of Functional Requirements from five to three. The three remaining categories are in the figure below.

As indicated, the changes made to the Functional Requirements were done in the process of developing the records requirements analysis component of RRAIT. It is likely that additional changes will be made as the tools are used and evaluated throughout the course of the project.

The Records Requirement Elicitation Component

The purpose of the RREC is to translate the Functional Requirements into a set of questions or prompts that identify application-specific records management requirements at the business process improvement stage of system development. Once identified, the records management requirements can be addressed through appropriate technology, management and policy strategies. The goal is to seamlessly integrate the capture of these requirements into business process analysis. In addition to identifying records management requirements, the tool categorizes the requirements into Legal, Regulatory, Best Practices and Agency Policy and Practices. During the process of developing the RREC, another categorization of the requirements emerged. It became clear that records management requirements should be viewed at three levels: Business Process, Record and Systems. The resulting structure of the RREC became a matrix with the questions associated with the various levels represented in the rows, and the categorization of the requirement as legal, regulatory, best practices or agency policies and practices as the columns. The Business Process Level set of questions is shown in the table on the following page.

The Business Process Level section of the RREC is intended for use during business process improvement activities. It focuses on records management requirements at the sub-task level as defined in the note in the table. Its purpose is to identify records management requirements for each sub-task and, further, to identify the category of the requirement - whether it is required by law, regulation, best practices in the field or is based on agency policy or practice. This designation facilitates the distinction between requirements that must be incorporated into a new system (without changes in legislation or regulation) versus those that could potentially be eliminated. It also aids in the identification of laws or regulations that could be considered for change to support radical re-engineering of a business process. With respect to overall process improvement, the questions also facilitate the identification of those sub-tasks that provide no value to the overall transaction. For example, if the record does not get modified during the sub-task, or if the modification is not required by law, regulation or professional best practices, the sub-task may be a candidate for elimination or modification.

Separate sets of questions have also been developed for record and system level requirements. The record level requirements focus on short- and long-term primary and secondary uses of the record and parts thereof. They also capture any requirements associated with the structure of a record and the authorization of responsibility for the creation of and modifications to a record. These requirements speak to internal agency or organizational uses of the records as well as external uses and include questions geared to identify the need for mechanisms to ensure efficient access to records. The system level requirements are more directly linked to the technology solutions and the capabilities of technology in meeting records management requirements, including migration to other systems.

The RREC was developed to meet several criteria. The first, and most obvious, criteria is that the tool aid in the effective and comprehensive capture of records management requirements. The second is that the tool can be seamlessly integrated into business process and system design

activities. In other words, the tool was crafted such that its use is not a separate activity over and above those typically conducted in process improvement or information system design.

Preliminary Testing of the Business Process Level RREC at the New York State Adirondack Park Agency

The products developed during the Models for Action project are being tested and evaluated in the context of a practical application at the New York State Adirondack Park Agency (APA). APA was selected based on its business need to integrate information from a variety of formats in the creation of a record of a transaction. In particular, APA's land use permit process was selected based on the need to integrate information from a geographic information system (GIS), relational database, paper maps in a variety of sizes, legal documents, as well as a variety of others in order to create a record of a transaction. The agency is currently in the process of evaluating a network-based solution to replace its current predominately paper-based system. The goal of system implementation is to increase staff productivity and decrease customer turnaround time.

To date, only the Business Process Level portion of the RREC has been tested. This portion of the RREC was used and evaluated during a two-day business process improvement workshop conducted with agency staff. The workshop was preceded by a series of staff interviews which resulted in a preliminary model of the land-use permit process. During the first day of the workshop, the preliminary process model was revised by the group and sub-tasks were identified. The questions indicated in the table above were then applied to each of the various sub-tasks.

Overall, the results of the test with the APA were extremely positive. The information gathered through the use of the tool was considered to be highly relevant to both records management issues and the examination of the process improvement alternatives. For example, many instances of proofs of authenticity were identified and categorized as legal, regulatory or agency policy and practice. This information will inform system developers that electronic alternatives to these proofs of authenticity will have to be implemented or redundant paper systems will have to be maintained. The tool also supported the identification of sub-tasks that could potentially be eliminated or shifted to other sub-tasks. The tool, therefore, greatly assisted in identifying areas for process improvement.

The tool was very easily and seamlessly integrated into the business process improvement activities. It never appeared as though there was a shift in focus from the process to records management requirements. In many cases, the questions from the tool brought to the forefront details about the sub-tasks that would not otherwise have been captured. The questions contained in the RREC were readily understood by the workshop participants. It is important to note that the ease of use of the tool, particularly ease with respect to the ability to answer the questions, is highly dependent upon appropriate participation. In other words, in order to identify whether a requirement falls under the legal, regulatory or another category, the individuals brought together to answer the questions must have this knowledge. In many cases, participation in these process improvement efforts will have to be expanded to include individuals who are not only familiar with the business process, but also those who have a knowledge about the laws and regulations

that influence the business process and associated records management requirements. The workshop at APA had this type of participation and this contributed greatly to the success of the activity.

Next Steps

Subsequent project activities will involve testing the record and system level sections of the RREC for comprehensiveness in identifying records management issues and ease of use. A prototype network-based system will be developed with APA in accordance with the information gathered through the use of the tool. As the prototype is developed, any specifications or system issues that were not captured through the use of the tool will be identified and the tool will be appropriately modified. The prototype itself will also be evaluated to identify the degree to which it meets the agency's records management requirements. Additionally, the tool and a description of and instructions for its use will be disseminated to records management experts and information resource management professionals for additional comments and feedback.

The second part of the Records Requirements Analysis and Implementation Tool, the Records Requirements Implementation Component (RRIC), which will focus on identifying technology, management and policy mechanisms for addressing the records management requirements, will also be developed. Project staff will also continue to disseminate information about the project and project products through the distribution of written materials, public presentations and over the CTG web site at www.ctg.albany.edu.

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Records Requirements Analysis and Implementation Tool

Records Requirements Elicitation Component

Three Levels:

- Business Process
- Record
- System

Records Requirements Implementation Component

Three Types of Implementation Strategies

- Management

- Policy
- Technology

Models for Action First Draft of *Functional Requirements*

1. **Compliant** - Legal and administrative requirements as well as best practices for record keeping related to a specific business process including those requirements specific to the field or discipline that the system will support, are addressed.
2. **System Reliability** - System should be administered in line with best practices in the information resource management (IRM) field to ensure the reliability of the records it produces.
3. **Records Capture** - Records are created or captured and identified to support the business process and meet all record keeping requirements.
4. **Records Maintained** - Electronic records are maintained so that they are accessible and retain their integrity for as long as they are needed.
5. **Records Are Usable** - Electronic records are usable for the purposes they were created and can be exported into an integral, accessible, usable format from the creating system to other systems. This includes the ability to transfer the records to an archival repository if necessary.

Models for Action Functional Requirements

1. **System Reliability** - System should be administered in line with best practices in the information resource management (IRM) field to ensure the reliability of the records it produces.
2. **Records Capture** - Records are created or captured and identified to support the business process and meet all record keeping requirements.
3. **Records Maintenance and Accessibility** - Electronic records are maintained so that they are accessible and retain their integrity for as long as they are needed.

Center for Technology in Government

NYS Archives and Records Administration

Models for Action Project

Records Requirements Elicitation Component

Business Process Level

1. What is the transaction to be automated (from the perspective of the customer)?
2. What are the sub-tasks associated with the transaction?*
3. For each of the subtasks gather the following information:
 - Legal
 - Regulatory
 - Best Practices

- Agency Policies and Practices

A. What is the purpose of the sub-task? Is it intended to fulfill a legal, regulatory or operational purpose?

1. Are there any when or how requirements for the transaction (i.e., time clocks or professional techniques)?

B. What other documents or information need to be accessed during the sub-task? Are copies of these records included in the record of the transaction?

C. Does the record of the transaction get created or modified?

1. If yes, (add to table) at what point in the transaction does the record get created or modified?

2. Who is authorized to change or modify the record?

3. What is the content of the record or the component of the record created during the sub-task?

a. Are there records created by other systems that need to be integrated into the record?

b. Are there any proofs of authenticity associated with the content created or modified during the sub-task?

*Sub-task starts a process and ends with a decision point or completes the transaction.