ELECTRONIC RECORDS ARCHIVES

INTRODUCTION TO POLICIES, TEMPLATES, AND REQUIREMENTS CONCEPTS
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NATIONAL ARCHIVES AND RECORDS ADMINISTRATION

ELECTRONIC RECORDS ARCHIVES PROGRAM MANAGEMENT OFFICE (NARA ERA PMO)

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INTRODUCTION TO POLICIES, TEMPLATES, AND REQUIREMENTS CONCEPTS
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Program Director,

I recommend approval of the Introduction to Policies, Templates, and Requirements Concepts (TEMP).

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INTRODUCTION TO POLICIES, TEMPLATES, AND REQUIREMENTS CONCEPTS

1.0 Purpose

The purpose of this paper is to provide an introduction to the concept of templates and how they relate to policies and requirements. The paper does not completely define the concept, nor does it attempt to fully articulate all its nuances. It is only meant to provide background information to more fully understand concepts that are introduced in other Electronic Records Archive (ERA) documents.

1.1 Introduction

The ERA system will perform two (2) main functions in support of the National Archives and Records Administration's (NARAs) mission. It will contribute to NARA's lifecycle management of records of all kinds, and it will ingest, manage, store, preserve and provide access to electronic records which are transferred to NARA's physical or legal custody. Given the high level of anticipated workload for the system, and the need for efficiency, the ERA system should be highly automated. Automatic execution of processes and transactions in both of the system's main functions must conform to NARA policies and prescribed procedures. For this to happen, the policies and procedures need to be implemented within the system.

In this paper, a procedure can be defined as an established course of action or a way of carrying out a business process. The procedures for NARA's major processes within the scope of the system: Records Management, Preservation, Archival Storage, Ingest, and Access, will be supported by the workflow and related document management and records management components of the system. These management processes, and the system components which support them, involve transactions about records, rather than processing of records themselves. In other words, these components will support the production, receipt, use, and management of *NARA's records* about the lifecycle management of the records of other records creators. For example, the workflow component of the system will enable agency officials to submit requests to transfer federal records to a Federal Records Center or the National Archives. The workflow component will be able to check automatically whether the official is authorized to transfer records of the specified agency, and whether the records schedule item cited in the request is in fact authorized and applies to the agency, and possibly to the records as described in the request. Workflow will automatically route requests through proper channels in NARA and will support necessary messaging between NARA and the agency about the transfer. These capabilities will be applicable to all records. However, the workflow component of ERA will not itself process any actual transfers of records. The ERA system will interface with other systems that are used in support of the processing of non-electronic records. The ERA system will actually process electronic records, but that will be accomplished by system components other than workflow. Therefore, other methods must be employed to ensure that processing and management of electronic records conforms to NARA policies.

This document describes a method for mapping NARA policies to the way the ERA system will process and manage electronic records. There are two (2), equally important elements in a mapping of policies to requirements. Requirements determine where there is a need or opportunity to apply policy, and policies determine what must or must not be achieved at those points. This document does not profess to contain definitive statements of NARA policies. Rather, it includes illustrative statements of policy, which are only hypothetical, but present a method for articulating policies in a manner that can be implemented in the system. The design of the ERA system must be policy-neutral; that is, the system should facilitate the implementation of NARA's policies, whatever they may be, and it should make it just as easy to change that implementation in response to subsequent changes in policies.

The requirement for a policy-neutral system is an ideal, which should guide design and development but cannot be fully achieved. In particular, even before reaching the design stage of system development, the possibility of policy neutrality is significantly constrained by the things, such as records, records schedules, reference requests, etc, that are represented in the system and by the way they are represented. For example, if the representation of the standard form used for transferring records to the National Archives in the system did not include information indicating what restrictions on access apply to the records, then the system would have no way of knowing that there are such restrictions, so NARA policies regarding such restrictions would be unimplementable. The things that need to be in the system, and the way they need to be represented derive from the requirements assigned to the system. Therefore, this document adheres closely to the requirements defined in the *ERA Requirements Document (RD)*. In effect, NARA made policy decisions in identifying and validating the ERA requirements. Other policies have to be aligned with these decisions.

The remainder of this document describes the concept of templates, relates the concept to business rules and requirements, and provides examples of how templates may be used within the ERA system.

1.2 ERA Program Overview

ERA will be a comprehensive, systematic, and dynamic means for preserving virtually any kind of electronic record, free from dependence on any specific hardware or software. The ERA, when operational, will make it easy for NARA customers to find records they want and easy for NARA to deliver those records in formats suited to customers' needs.

2.0 Document Assumptions

The following assumptions were made during the development of this document.

- The TEMP's intended audience is the ERA development contractor and the ERA Program Management Office (PMO).
- The TEMP is meant to provide guidance for the proposal phase of the ERA program. The concepts embodied in the TEMP are expected to be further refined and explored during the Analysis and Design Phase of the ERA program.

3.0 Acronyms and Definitions

Table 3-1, Acronyms List, contains a list of acronyms used herein.

ACRONYM	DEFINITION
ConOps	Concept of Operations
ERA	Electronic Records Archives
FRC	Federal Records Centers
NARA	National Archives and Records Administration
PMO	Program Management Office
RD	Requirements Document
TEMP	Introduction to Policies, Templates, and Requirements Concepts

Table 3-1: Acronyms List

4.0 Templates

From a practical perspective, policies provide guidance in specific cases, but they cannot prescribe every eventuality. Both the limitations of NARA's knowledge about electronic records across the Government and continuing change in information technology indicate that there will be many specific cases which NARA cannot foresee in their entirety. A method for both identifying and managing such cases is through the use of 'templates'. The concept of a 'template' was adopted by the Integrated Product Teams responsible for drafting the ERA *Concept of Operations (ConOps)* and *Requirements Document (RD)*. This concept was intended to be an abstract manner of expressing requirements that apply to electronic records without prejudicing the selection of technology to implement these requirements. While not explicit, it reflected a preference for preserving electronic records in a self-describing form; that is, where a record includes internal marks which identify the elements of content of the record and their organization within the record, which can be evaluated without the need for external references. A self-describing record may be linked to an external model, a "template", which specifies and characterizes the elements that are either required or permitted in a record of that type. This is the concept of a "compliant" self-describing record. The *RD* states that NARA will apply templates to a wide variety of its assets. This broad application of templates is necessary to optimize the potential for automation in ERA. The application of the concept of 'template' to the lifecycle management of records is simply recognition of long-established practice. For example, Standard Forms 135 and 258, for transfer of record to a Federal Records Center (FRC) and offers to the National Archives, respectively, are templates for those types of transactions. The ERA system will extend these existing models, which relate only to information about the transaction and the actors involved, to cover the sets of electronic records involved in those transfers. The use of templates for sets of records is necessary because, in order for ERA to provide access to sets, such as series and file units, of electronic records, it will have to have a way to identify the records which belong in any set and a way to virtually arrange the records according to their original order.

Automation is likely to entail changes in existing templates. For example, as long as records schedules are interpreted by humans, it is possible to write disposition instructions in a way that allows a person of average intelligence to interpret them. However, to automate the execution of those instructions, it is necessary to formulate them in a manner which enables them to be translated correctly and unambiguously into executable form.

NARA expects to implement a hierarchical scheme for managing templates. There will be two (2) independent hierarchies of templates, corresponding to the two (2) basic classes of objects to which templates are applied: records themselves, and lifecycle management processes related to records. In each, higher level templates will tend to be more general in their articulation and broader in their application. Lower level templates will be expressed more precisely and applied more narrowly. The top layer(s) of each template hierarchy will consist of one (1) or more templates established by NARA and constituting standards for the domain to which they apply. For example, templates related to lifecycle management processes should be subdivided according to the different types of processes. For the disposition process, the top level template for disposition agreements would apply to all possible disposition agreements and would include broad requirements, such as the identity of the records creator and the records covered by the agreement, and articulation of a disposition instruction which indicates the type(s) of disposition actions which will be taken in implementing the agreement. At the next lower level, there would be a template for each of the different types of disposition agreements NARA uses: deed of gift, deposit agreement, and Federal records schedule. Another level down from Federal records schedules, NARA would specify templates for agency records schedules and General Records Schedules. Similarly, standard templates for records and sets of records would be subdivided based on type of record or type of record set.

Below the NARA standard templates, agencies, and other records creators, may define more precise templates that apply specifically to their records, at varying levels of granularity. Any agency template must conform to the relevant NARA standard template. That is, the agency template must include all the elements required by the NARA standard, it must identify and describe any elements qualified as optional in the standard, using the specifications for characterizing optional elements set out in the standard template, and it must exclude any elements precluded by the NARA standard. Agency templates may also include additional elements which are not referenced in the NARA standard but are important for agency purposes. For such elements, agency templates must simply conform to NARA standards for articulating templates for transactions, records, or record sets. Once an agency has established and registered with NARA a conforming template, it may refine that template at lower levels, without limit, to describe subsets of its records, provided that conformance with the relevant NARA standard template can be traced from top to bottom of the hierarchy in all cases.

5.0 Linking Policies, Business Rules, Templates, and Requirements Concepts

This document applies the following concepts to the ERA system:

- **Policy**: a management direction concerning users or use of the system or objects that enter, exist in, or exit from the system.

- **Business Rule**: An executable command within the system that implements a policy or a domain requirement, either uniformly or under specified conditions.

- **Template**: a static prescription concerning required, allowed or excluded attributes and operations for objects or classes of objects in the system.

- **Other Control**: another method used to implement a policy in a system; e.g., user access right, security, and standard.

These concepts can be mapped to the ERA requirements by starting with the high level functional requirements; stating policies that apply to each function; identifying the business objects that are involved in carrying out the functions; articulating specific business rules that apply a policy to a class of objects; and then determining how that rule can be implemented in a template or another type of control.

NARA's policies, principles, and business rules should be implemented in ERA for each of the NARA mission processes grouped under the following headings in the *RD*:

- Records Management
- Preservation
- Archival Storage
- Ingest
- Access

6.0 Hypothetical Cases

This section provides illustrative examples of how NARA's policies, business rules, and templates could be implemented in ERA. The first illustrates the derivation of business rules and requirements for other controls from NARA policies. The second illustrates the role of templates in an empirical scheduling scenario based on a hypothetical series of records.

6.1 Deriving Control Requirements from Policies

This case starts with hypothetical policies applicable to the top level ERA requirement, "ERA1 The system shall manage the disposition of records." It focuses on the specific management process, "Schedule Federal Records." The policy statements are used to derive general business rules needed to implement them in the system. Then, elements that need to be in templates in order for the business rules to execute are identified. In some instances, more precise business rules can be tied to the application of templates, such as for special cases, for handling exceptions to more general rules, or for specifying terms or conditions linked to the general rules.

Policies for Schedule Federal Records

- All Federal records must be retained and destroyed in accordance with an authorized records disposition schedule.
- Schedules for specific sets of records are proposed by the creating agency.
- Schedules for abstract classes or sets of records are proposed by NARA.
- Records schedules are authorized by NARA.
- Archival appraisal is a prerequisite for authorization.
- Transfer of physical and/or legal custody of records to NARA should be specified in an authorized schedule.

Business Rules and Templates for "Schedule Federal Records"

Policy: Federal records must be retained and destroyed in accordance with an authorized records schedule

- *Business Rule*: Any transaction in ERA to bring Federal records into the system or remove them from it must conform to an authorized schedule item

  - *Template*: The template for Records Schedule would include a 'schedule item' element which would specify how the records covered by the item are to be identified. A schedule item would include a sub-element, 'disposition rule,' which would indicate if the records are temporary or permanent and could provide for transfer to an FRC. For permanent items, the default rule would require stipulating when records should be accessioned into the National Archives. For both transfer and accessioning actions, the template would require specification of what subset of the records covered by the item should be included in a single transfer.

    - *Business Rule Condition*: For permanent records to be transferred to an FRC, that transfer must precede, by a minimum of x years, accessioning into the National Archives.

    - *Template*: The template for Disposition Rule should include an element specifying how long permanent records are to be stored in an FRC before they are offered to the National Archives.

  - *Business Rule Exception*: NARA may authorize ad hoc transfers of unscheduled records to an FRC or the National Archives.

    - *Template*: The template for Records Center Transfer should include an optional element for authorization, by an appropriate NARA official, of transfer of unscheduled records.

Policy: Schedules for specific, empirical classes or aggregates of records are proposed by the creating agency

- *Business Rule*: schedules proposed by an agency must be submitted by the agency's records officer.

  - *Template*: The Records Schedule Template must include an item identifying the records officer.
  - *Other control*: authority list of designated records officers.

- *Business Rule*: Items in an agency records schedule must unambiguously map to one (1) or more sets of records defined in the agency's recordkeeping system.

  - *Template:* The 'Item' element in the Records Schedule Template must specify what records are covered by the item in accordance with the records classification scheme and, if applicable, with organizational location within the agency. The Template for Records Classification Scheme must include an element which uniquely identifies each aggregate of records and is identical, or unambiguously mapped to, the identification of the records in the Records Schedule Item Template.

- *Business Rule*: a series or sub-series of records must have one (1) and only one (1) disposition rule.

  - *Template*: the description of a set of records in a Records Schedule or in a linked Records Classification Scheme must be sufficient to enable ERA to check if any proposed schedule item duplicates another item in any authorized schedule applicable to the same organization.

6.2 Application of Templates to the Lifecycle of Records

This case uses a hypothetical body of records, the correspondence files of an agency head. This series of records has existed since the agency was created. It is divided into two (2) subsets: routine or "bulk" correspondence and special correspondence. Routine correspondence consists of mail from the general public which either requires no response or is appropriate for a standard response, such as agency leaflets or form letters. Special correspondence is correspondence which requires a specific response. Both sets are filed by subject. Currently, special correspondence is kept as scanned images of both the incoming and response, and a database is used to identify both and to track assignments and status in preparation and sending of the response. Routine incoming correspondence is kept on paper. Rather than keep a copy of the response to an incoming routine message, the agency annotates the incoming letter to identify the response provided and the date it was sent. It also retains exemplary copies of each form letter and leaflet. In the case of letters which receive a standard response, the database identifies which response was sent. The agency's records schedule designates all the special correspondence as permanent. A statistical sample of routine correspondence is kept permanently. The rest is destroyed three (3) years after receipt. The records covered by the two (2) permanent Schedule Items are transferred to the National Archives in annual files. The agency records schedule needs to be updated to reflect the fact that special correspondence is now kept as digital images and to provide for disposition of the database. This example traces the revision of the schedule as it would occur in the ERA system.

The process begins with the agency's records officer logging onto the ERA system and retrieving the Schedule Item for the correspondence files and indicating a change is needed in the Sub-Item for special correspondence. The template for Agency Records Schedule requires that the Description of permanent Records identify whether the Records are Hard Copy or Electronic Records. The records officer changes the designation of special correspondence from Hard Copy to Electronic Records. The template requires that the Data Format(s) of Electronic Records scheduled for transfer to NARA be specified, so the system prompts the user to enter that information. From Authority Lists provided by the system, the user selects both TIFF images and relational database as Data Formats. NARA's business rules for transfer of Electronic Records require an associated Preservation and Access Plan which stipulated how NARA will preserve the Records to support required Reference Services for as long as needed. The system provides the user with a draft Preservation and Access Plan, based on the NARA standard template for a Preservation and Access Plan for Permanent Electronic Records, and prompts the user to enter additional specifications related to each Data Format; for example, it asks whether the TIFF images are in single page or multi-page files, and it asks the user to identify required and optional technical specifications for the database and the format in which each of these will be transferred. The system also requests the user to select a Transfer Mechanism (physical media or online transfer) which will be used to move the Electronic Records from the agency's system to ERA. These technical specifications are entered into a proposed Preservation and Access Plan for the sub-series of special correspondence.

At this point, the system modifies its representation of the record set for special correspondence to create three (3) lower level sets:

- The hard copy files which were maintained from the start of the series until the switchover to scanned images;
- The scanned images, which have the switchover as start date and which are designated as a successor to the hard copy files; and
- The database, which has the same start date as the images.

The system prompts the user to update the Disposition Instruction for this Sub-Item. The records officer reviews the current instruction and determines that no change is required: the records will continue to be sent to NARA in annual batches. The records officer logs off.

The system then alerts the NARA appraiser responsible for the agency that a change has been proposed to the Records Schedule. The system presents both the proposed Schedule Item and the draft Preservation and Access Plan to the appraiser. The appraiser determines that the change is not in the nature of the Records, but in the way the Records are kept; therefore, the permanent value of the sub-series does not need to be reappraised. In reviewing the draft Preservation and Access Plan, however, the appraiser determines that additional information is needed. For example, in order to reconstitute subject files, and even to link an incoming letter with its response, NARA needs to know whether the images of the letters are stored as binary objects within the database, or separately. The first alternative is NARA's standard method for re-establishing Record Aggregates which include document images and related data. Using this approach, queries against the database would be sufficient to identify and retrieve and incoming/response pair and to reconstitute the subject File Units. However, the appraiser learns that the image files of special correspondence are stored outside of the database. NARA needs to affirm that the database contains pointers to the images stored elsewhere and what type of pointer is used. If the pointer is a persistent identifier that is inextricably linked to the image file, NARA will be able to use the pointers to retrieve related letters and File Units. However, if the pointers are platform dependent, such as physical addresses or directory paths in the agency's system, the pointers will have to be replaced with persistent identifiers, and the correct identifier will have to be embedded in the metadata of each image file. The records officer informs the appraiser that the database entry for each item of correspondence contains the directory path to the file where the letter is stored. This constitutes an exception to the applicable NARA Preservation Standard, so the appraiser asks for the assistance of a preserver in negotiating with the agency terms and conditions for the Schedule Item which will enable transfer of the Records from the agency's system to NARA and re-establishment in ERA of the Record Aggregates in the sub-series. Upon completion of the negotiation, the terms and conditions are included in the Schedule Item, and corresponding methods specified in the Preservation and Access Plan.

7.0 Conclusion

This document suggests three (3) approaches NARA can use to develop standard templates for use in the ERA system. The first approach is to delineate different domains in which templates will be used. **Section 4** of this document suggests two (2) basic domains: record objects and records lifecycle management processes, and it suggests further subdivisions of these domains. Each domain will be the locus of a hierarchy of templates. The second and third approaches are illustrated in the two (2) examples in **Section 6**. They are, in effect, methods for specifying the content of templates within a domain. The first method is a top-down approach which starts with NARA policy, articulates the business rules that need to be executed to implement the policy in the system, and then identifies elements that need to be in templates to ensure that the rules can be executed in individual cases. The second is a bottom-up approach which describes scenarios for use of the system and identifies the role template(s) play in carrying out the scenario. Logically, the top-down method is most suitable for articulating templates in the lifecycle management process domain, while the bottom-up approach is appropriate for articulating templates in the record objects domain. However, the examples show that both methods can yield refinements in either domain.