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International Research on Permanent Authentic Records in Electronic Systems

Appraisal Task Force Final Report

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Abstract

The Appraisal Task Force of the InterPARES project on the long-term preservation of authentic electronic records set out to determine whether the evaluation of electronic records should be based on theoretical criteria different from those for traditional records and how digital technologies affect the methodology of appraisal. The Task Force conducted a review of the literature on appraisal of electronic records and a study of institutional policies, procedures and methods in preparation for its main task, to prepare a model of the activities involved in selection of electronic records as the principal means of isolating the various theoretical and methodological questions that arise. Development of the model relied on the method of analysis of electronic records and the conceptual requirements for assessing authenticity developed by the Authenticity Task Force.

The model characterizes four main activities: (1) managing the selection function, (2) appraising electronic records, (3) monitoring appraised electronic records, and (4) carrying out disposition of electronic records.

The main concern of the Task Force was to establish how during appraisal consideration of the authenticity of records could be made. To this end it identified several distinct but related activities of appraisal. Like all appraisal, appraisal of electronic records depends on compiling information about the records and their various contexts. This information serves as the empirical data on which judgements are made about the value of records. Determining the value of electronic records involves assessing their continuing value in a manner quite parallel to that for traditional records, but there is the additional need to assess their authenticity in terms established in the conceptual requirements. The next step, one peculiar to electronic records, is to determine the feasibility of preserving them authentic. The results of assessing value and determining the feasibility of preservation go together to make an appraisal decision. This report gives a detailed explanation of all the activities of appraisal of authentic electronic records.

Many of the problems that occur in the archival treatment of electronic records come from the effects of changes in their technological and other contexts that occur during their lifetime. These changes mean that the preserver must regularly monitor appraised electronic records as a means of keeping appraisal decisions and information about the records and their context up to date, valid, and practicable. Appraisal decisions incorporate information that must be extracted and carried with or associated with electronic records selected for preservation. In this sense, appraisal is the first step and part of the process of preservation of authentic electronic records.

The report concludes that the nature of the technological context brings an additional evaluative dimension, always latent with traditional records, into the

foreground of appraisal of electronic records: the assessment of authenticity and the determination of the means to preserve electronic records in authentic form. The report gives a detailed account of all aspects of the process of selection, with recommendations relating to the main requirements for implementation.

1. INTRODUCTION

This report communicates the results of the work of the Appraisal Task Force of the InterPARES project investigating the long-term preservation of authentic electronic records. The Task Force set out in its Domain (Domain 2) to determine whether the theory and methodology of appraisal for electronic records differs from that for traditional records, and what role the activities of appraisal play in the long-term preservation of electronic records. In doing so it relied heavily on and coordinated its work with the other two InterPARES task forces. In Domain 1, the Authenticity Task Force was concerned with the conceptual requirements for assessing the authenticity of electronic records, and, in Domain 3, the Preservation Task Force was concerned with the theory and methodology of long-term preservation. The original InterPARES research plan asked the Task Force to answer seven questions in its domain:

- What is the influence of digital technology on appraisal?
- What is the influence of retrievability, intelligibility, functionality, and research needs on appraisal?
- What are the influences of the medium and the physical form of the record on appraisal?
- When in the course of their existence should electronic records be appraised?
- Should electronic records be appraised more than once in the course of their existence, and, if so, when?
- Who should be responsible for appraising electronic records?
- What are the appraisal criteria and methods for authentic electronic records?

Although these questions animated the research, many other, often related but sometimes new, questions arose as it progressed. The research moved through three phases. It began with a review of the literature on the appraisal of electronic records. It then examined the available documentation from archival institutions on their appraisal policies, procedures, as well as reports on actual appraisals of electronic records. The final phase, and the most important, involved developing a function model of selection of electronic records in order to gain a detailed understanding of the nature of the activities to be performed in appraising electronic records to be preserved in authentic form. Selection

encompasses both appraisal and carrying out the disposition of electronic records. It was mainly during the modelling that new questions arose and were answered.

It is worthwhile emphasizing that the Task Force aimed primarily to identify the specific junctures in the selection process when issues of authenticity come into play. It was for this reason that it has relied heavily on the conceptual requirements for assessing authenticity developed by the Authenticity Task Force and on the preservation requirements developed by the Preservation Task Force. The activities of appraisal constitute a vital encounter between the entity responsible for long-term preservation and the entity creating electronic records. It is the time when the former takes over responsibility for preserving electronic records from the latter. The most important aspect of this passing of responsibility is to insure, as much as is possible, that the *identity* and *integrity* (as defined by the Authenticity Task Force) of the records can be established and preserved over time.[1] The conceptual requirements for assessing authenticity are therefore an important guide in the process of identifying electronic records and establishing their integrity during appraisal. The requirements for preservation come into play in a vital way when assessing the feasibility of preserving authentic electronic records. The work of the Appraisal Task Force must therefore be viewed in the light of the work and results of the two other Task Forces. The main connections and consequences of these relationships will be outlined in this report.

The primary outcome of the work of the Appraisal Task Force is the function model of the selection process. It and the thinking behind it represent the main contribution of the Task Force to the problem of long-term preservation of authentic electronic records, as this report will explain at length.

2. BASIC ASSUMPTIONS OF THE RESEARCH

2.1 Definition and situation of appraisal

In common usage, appraisal is defined as "the act of estimating the nature, quality, importance etc. of [something]."[2] Archival dictionaries and glossaries speak of appraisal as being "a basic archival function" aimed at determining the disposition or disposal of records, that is, usually either their continuing preservation or their destruction. In some cases, records may be alienated from

[1] "The identity of a record refers to the distinguishing character of a record, that is, the attributes of a record that uniquely characterize it and distinguish it from other records." " The integrity of a record refers to its wholeness and soundness: a record has integrity when it is complete and uncorrupted in all its essential respects…. When we refer to an electronic record, we consider it essentially complete and uncorrupted if the message that it is meant to communicate in order to achieve its purpose is unaltered." InterPARES Project, *Authenticity Task Force Final Report, Draft for Comment, [August 2001]*, p. 27.

[2] *Webster's Encyclopedic Unabridged Dictionary of the English Language*, 1989 ed., s.v. "appraisal".

their creator. [3] Appraisal involves making a judgement or estimation of the worthiness of continued preservation of records. The Appraisal Task Force treats the term appraisal in this sense of coming to a determination of the disposition of records. However, the Task Force considered that the function at issue is broader than the matter of determining the disposition of records. It did so because appraisal is often, though not always, part of the act of acquisition of records by the entity responsible for their long-term preservation, the preserver. Most commonly, the preserver appraises records, that is, determines the worthiness of their continuing preservation, *and* carries out their disposition. Carrying out disposition of records usually (but not always) involves a transfer of custody of records determined to be worthy of continuing preservation from the creator to the preserver and/or destruction of records not deemed worthy of long-term preservation. In situations where the preserver has responsibility for appraisal, it often comes to decisions about the fate of records in consultation with the creator. Carrying out disposition is also often a shared responsibility between the creator and the preserver. Responsibility to destroy records may fall to the creator or to the preserver or be shared by them.

The preserver is the juridical person whose primary responsibility is the long-term preservation of authentic records. The preserver may be an archival institution, such as a national, state, or provincial archives given responsibility for the long-term preservation of the records of a governmental organization. It may be an office of an organization, such as is often the case of the archives division or department of organizations like churches, businesses, or universities. It may even be an office within the entity creating the records, as would be the case, for instance, of an agency's archives within an organization like a government, were such an office given responsibility for long-term preservation of electronic records. In short, there must be some entity that is assigned responsibility for preservation. Therefore, the Task Force proceeded from the perspective of this entity and with long-term preservation in mind.

Whatever the division of responsibilities may actually be, it is necessary to conduct appraisal to identify records worthy of continuing existence, then carry out the disposition of records determined to be of long-term value, and finally set in motion arrangements for their preservation. It is this selection function, rather than the differences in the way responsibility for them is actually assigned, that interests the Task Force. It is assumed that the activities of appraisal and carrying out disposition, once they are understood in sufficient detail, can be conducted in numerous administrative contexts.

The other premises of the research are found in concepts, such as of "electronic record" and "authenticity" of the project at large. Where it is necessary in this report, these other concepts will be discussed.

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[3] The creator is the physical or juridical person in whose archival fonds the record exists. The fonds is the whole of the records created (meaning made or received and set aside for action or reference) by a physical or juridical person in the course of carrying out its activities.

3. RESEARCH DESIGN AND METHODOLOGY

3.1 Literature review

In the first stage of its research, the Task Force conducted a review and analysis of the existing literature on appraisal of electronic records to confirm or reject the various research questions with which it began. For the most part, it confirmed the wisdom of these initial questions. The full review is reproduced as an appendix to this report. However, some of the main findings of the review are worth repeating at this juncture.

The review determined that a consensus had developed that electronic records must be appraised from the same theoretical and methodological standpoint as traditional records. That is, important as the influence of technology is on certain aspects of methodology, writers still employed the same general concepts in their writing about electronic records, particularly in assessing the full context of electronic records and their continuing value. In the view of many writers, the main influence of the technology was in fact a negative one. Few creators made adequate provision for electronic record keeping, with the result that it was difficult to determine what an electronic record was in many cases and therefore to conduct appraisal of them. In particular, archivists wrestled with the problem of what to do with dynamic databases, many of which were implicated in record keeping but did not actually produce records.

Many writers discussed the question of the timing of appraisal. Almost all of them concluded that appraisal had to be conducted early in the life of systems producing them. Experience with records removed from active systems without adequate documentation of their context of creation hampered both appraisal and preservation activities. To avoid these problems, most writers advised early archival involvement with creators to determine records of continuing value and develop procedures for their disposition.

The review implicitly reveals that writers rarely addressed the application of the concept of authenticity to appraisal. For the most part, they assumed that preserving electronic records in authentic form is a matter for the preservation function. Appraisal determines which records are to be preserved; it is then up to the preserver to ensure their continuing identity and integrity. Although that is true, the work of the Task Force explicitly shows that the concept of authenticity has important application during appraisal, as will be explained.

3.2 Review of policies and procedures

The review of policies and procedures of archival institutions and programs amplified the findings of the literature review, as might be expected. It also revealed that only a small number of institutions and programs had anything like extensive experience appraising electronic records. Those that did appraised

electronic records in conjunction with and using similar methodology to that for traditional records.

The main documentation of value proved to be actual reports of appraisal of electronic records. These reports revealed that archivists expended much time and energy to appreciate the various contexts of the records, including of course the technological context, applied criteria familiar in the appraisal of traditional records, and spelled out the terms and conditions of disposition of records deemed worthy of continuing preservation. Together the reviews of the literature and policies and procedures provided a body of empirical knowledge used in the Task Force's main exercise to develop a function model of selection.

3.3 Modelling the selection function

A function model represents the various activities of a functional process in a series of structured diagrams. The Task Force used IDEF (0) or Integration Definition for Function Modelling, which is derived from Structured Analysis and Design Technique. IDEF (0) is a United States Federal Information Processing Standard, which is detailed in Publication 183 of the National Institute of Standards of Technology (see <http://www.idef.com/idef0.html> for more information). The model and the related definitions of terms are reproduced in appendices to this report.

The purpose of the model is to characterize the relationships of the activities involved in selection of authentic electronic records for long-term preservation. The model is produced from the viewpoint of the entity responsible for the long-term preservation of electronic records of an organization. The assumption is that the same activities occur in any context where selection is performed. Arrows pointing into a box representing an activity indicate inputs. Arrows pointing outwards from boxes indicate outputs. Arrows pointing down from the top of boxes indicate constraints on the activity, and arrows pointing upward the mechanisms necessary to accomplish the activity.

The following discussion can be read independently of the model, but an indication of the number of the diagram is given to aid the reader interested in finding the part of the model relevant at any point in the explanation of the process.

The Task Force employed modelling methodology in order to isolate and characterize the various activities of the selection function. The methodology requires consistency and careful definition of the concepts and terms used in the model. However, the model itself, because it depicts a highly intellectual and complex process, needs considerable explanation, which the next section of this report provides.

4. RESEARCH FINDINGS

4.1 Preamble

The work on the model began in early 2000. At this time, the Authenticity Task Force had already developed the *Template for Analysis* of electronic records to be used by the project. The *Template* and, subsequently, the *Requirements for Authenticity* provided an important conceptual framework for the thinking behind the modelling. In several meetings of the Task Force over the next year and a half, the model was refined and coordinated with the work of the other two Task Forces.

4.2 The Scope of the Main Activities in Selection (Diagram A0)

From the perspective of the preserver, appraisal is obviously a vital first step in the process of preservation. Selecting electronic records involves appraising them *and* carrying out their disposition. Carrying out disposition acts as a bridge between the activities of appraisal and those of preservation. Information about electronic records amassed during their appraisal is vital to the actions taken to determine and carry out their disposition and then, later on, to the actions taken to preserve them. Nevertheless, it is important to note that responsibility for the actions of carrying out disposition will probably be shared between the creator and the preserver in most instances. Clearly the organization's policies and procedures will have to sort out the responsibilities that fall to the creator and those that fall to the preserver as part of the disposition rules guiding transfer of records.

The point about disposition rules makes it clear that one of the activities of selection is to establish, implement, and maintain a framework for the selection function. Managing the selection function also sets the rules and conventions of the preserver that govern appraisal.

Many of the problems that occur in the archival treatment of electronic records come from the effects of changes in their technological and other contexts that occur during their lifetime. Monitoring these changes is a distinct activity, one that ensures that up to date information about records so destined is compiled and appraisal decisions updated accordingly or, where there is a need, revisited. To a large extent, monitoring electronic records selected for preservation is our answer to the research question, "When in the course of their existence should electronic records be appraised?" The answer is frequently dictated by the circumstances of change in the context of the records. In cases where the appraisal decision is built into design of electronic systems, such as by records scheduling, or where it is conducted sometime after a system has been in operation, monitoring records selected for preservation and making adjustments as needed is part of the process of selection. By contrast, appraising electronic records long removed from the active system in which they were generated is usually made more difficult because the relevant information about their

technological and other contexts is no longer available or difficult to obtain.

Selection, therefore, encompasses four main activities: (1) managing the selection function, (2) appraising electronic records, (3) monitoring electronic records selected for preservation, and (4) carrying out the disposition of electronic records.

4.3 The Broad Picture of Selection (A-0)

Selecting electronic records for long-term preservation, like selecting records in general, responds, broadly speaking, to societal needs and to the creator's needs for continuing reference to the records. It also responds, explicitly or implicitly, to certain legal requirements, that is, to the concepts, principles, and specific statements in law relevant to the selection of records. All the activities of selection are conducted with an understanding of the theory, methodology, and practice of archival science, including the requirements for ensuring authenticity of records. Societal needs, creator's needs, legal requirements, and archival science and authenticity requirements all condition or influence the process of selection. How they influence actions and decisions from juridical system to juridical system or for any preserver is a question that is beyond the scope of our research. Nevertheless, it seems obvious that managing the selection function is largely a matter of taking these conditioning factors into account when developing policies, strategies, procedures, and standards.

It hardly needs saying that to effect selection of electronic records requires knowledgeable persons, certain facilities, and computer equipment and software. These are the necessary instrumentalities of selection. As mechanisms employed in carrying out selection, they are needed for all of the activities described in this report.

Broadly speaking, selecting electronic records means identifying records for transfer to the preserver for continuing preservation. From among the electronic records produced by an organization some will be selected and transferred to the preserver and some will not. The outcome in any given case will either be a transfer of electronic records selected for preservation from the creator to the preserver or a designation of electronic records not selected for continuing preservation. It is a matter of organizational policy whether or not the preserver plays a role in the disposition of electronic records not selected for preservation. In any event, the outcome or result of selection is that electronic records both destined and not destined for continuing preservation are identified.

The work of the Task Force has confirmed something that is implicit, but not spelled out clearly, in the literature on appraisal of electronic records. In large measure, selection of electronic records depends upon a gathering and assessment of information about the context of a given body of records or information derived from the records themselves. Then relevant information gathered during the process must be associated with the records so that they

can be managed effectively by the preserver and easily understood by future users. Obviously, a great deal of information about the context of electronic records exists while they are in active use, because it is needed for the continuing management of the records. This information often disappears or is difficult to assemble once records are removed from the active system in which they were generated. This situation provides a strong argument for beginning appraisal while records are still "live" in a system, and monitoring each phase of their existence to keep appraisal decisions relevant and disposition plans practicable.

In particular, information about the technological context[4] of electronic records comes into play at two vital stages of selection. It is needed when assessing records' authenticity, and when determining the feasibility of preserving authentic electronic records, as later parts of this report will spell out in greater detail. The other contextual information (juridical-administrative, [5] provenancial,[6] procedural,[7] and documentary[8]) tends to be relevant when assessing the continuing value of records, that is, judging their capacity to serve the continuing interests of society and their creator. For the most part, appraisers draw inferences about the continuing value of records from an understanding of the records and their various contexts.

Two kinds of information result from the appraisal process. On the one hand, there is information about the appraisal decision itself, and information about the electronic records selected for preservation and "packaged" with them as part of a transfer from the creator to the preserver. The latter is the information about electronic records necessary to maintain them continuously in authentic form, and includes the terms and conditions of transfer,[9] to which the preserver may have to refer from time to time, such as when determining that a transfer contains the actual records designated to be transferred in a particular case.

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[4] The *Template for Analysis* has defined the various contexts of an electronic record, and therefore by implications of bodies of electronic records such as are examined during appraisal. Technological context as "the hardware and software environment in which the record exists or was created."

[5] Juridical-administrative context is "the legal and organizational system in which the creating body exists."

[6] Provenancial context is "the creating body, its mandate, structure, and functions."

[7] Procedural context is "the business procedure in the course of which the record is generated."

[8] Documentary context is "the fonds to which a record belongs, and its internal structure." Internal structure refers to the relationships among the records in a fonds.

[9] The Task Force has defined terms and conditions of transfer as "a document that identifies, in archival and technological terms, electronic records to be transferred, together with relevant documentation to accompany them, and that identifies the medium and format of transfer, when the transfer will occur, and the parties to the transfer."

4.4 Managing the selection function ((A0, A1)

4.4.1 Constraints on the process

The preserver needs to establish, implement, and maintain a framework of policies and procedures guiding the selection function. The purpose of management is to make sure that the preserver's requirements for selection of authentic electronic records are met effectively and efficiently. Managing the selection function means taking responsibility for the whole process, both the quality of its outcome and the efficiency of the process. The main responsibility is to ensure that those records of continuing value are identified and capable of being maintained according to the appropriate authenticity requirements.

Typically, the activity of managing a process transforms external requirements into internal directions. Furthermore, it receives feedback from internal processes and reacts to these feedback signals by modifying directions. Like any higher-level management process, it is not too structured, and this is also true for the knowledge and information used and processed in the function. The main process could be described as follows: Collecting and evaluating requirements for, constraints to, and opportunities for potentially appropriate and operational appraisal strategies. Indeed, like any management process, it is focused on matching external needs, requirements, and constraints with the possibilities of the system or processes to be managed. One other characteristic of managing is its relative autonomy in interpreting external requirements and gathering relevant information. This means that it is not possible to establish policies, strategies, procedures, criteria and standards that will fit all circumstances. Instead, we can only indicate the general considerations that go into building the managerial framework.

The external conditioning factors on the selection function are assessed during analysis of the creator's needs for effective disposition of records, the broader societal needs for reference to records, the necessity to observe and meet authenticity requirements, the imperatives of any legal requirements bearing on the records, and, of course, the need to observe the concepts and principles of archival science. The notion of creator's needs and societal needs is a familiar one in archival science. Schellenberg recognized creator's needs in his concept of primary value, and societal needs in his concept of secondary value.[10] These needs include requirements for rendering accountability, in the political, administrative, fiscal, legal, and broader societal senses. All these constraining factors are considered when developing the policies, strategies, procedures, criteria, and standards guiding the selection function.

Obviously, external factors such as creator's and societal needs and legal requirements will vary from situtation to situation. They are factors that will, through policies and so on, influence the value judgements made during

[10] T.R. Schellenberg, *The Appraisal of Modern Public Records*. Bulletin 8 (Washington: National Archives and Records Service, 1956).

appraisal. The requirements dictated by the concepts and principles of archival science are another matter. In fact, the concept of authenticity and the conceptual requirements for assessing authenticity are matters of archival science. Because they are the most important concepts bearing on long-term preservation of *authentic* electronic records, and to ensure that they are recognized as an important conditioning factor of the process, authenticity requirements are highlighted as a separate constraint on managing the selection function. They explain the concepts guiding practice. Even though their application in any given case may be a matter of judgement, it is not a value judgement that is at issue, as is the case in judgeing continuing value to the creator and society. The manner in which authenticity requirements guide the conduct of appraisal will be detailed in some considerable detail as we move through the specific activities in which they come into play.

4.4.2 Information needed for management

Essentially, four kinds of information are needed to support the development of policies, strategies, and procedures guiding selection: information about the records' context, information about appraisal decisions, information about updated appraisal decisions, and information about disposition.

In any given case, the preserver aiming to develop a framework for selection must gather information about the context in which records for which it has responsibility are created. For instance, if a government archives, what range of agencies is it responsible for, under what administrative arrangements, performing which functions, and so on? Information of this kind feeds directly into the process and comes out of it in statements (such as on the scope of records to which the policy applies) in the framework.

Information about appraisal decisions already made provides valuable intelligence about the success or lack of success of the process, and as such is an important input to establishing, implementing, and maintaining an effective framework. Where the process of monitoring electronic records selected for preservation results in updated appraisal decisions, information about these updated decisions and the reasons for them also provides valuable intelligence to feed into the process of managing the framework.

Much the same is the case with information about the disposition of electronic records. Experience of actual dispositions over time will reveal information useful for managing the framework, such as whether appraisal decisions are properly implemented.

4.4.3 Results of managing selection

There are two aspects of the framework. One is a set of rules and conventions governing the conduct of appraisal, what for convenience we call the appraisal strategies. The appraisal strategies operate as controls on the processes of appraisal of electronic records and monitoring of electronic records selected for preservation. The appraisal strategies encompass:

- criteria for appraisal
- guidelines on how to apply authenticity requirements
- procedures for carrying out appraisal
- guidelines for reporting the results of appraisals
- procedures for reporting on appraisal activities

The second aspect is a set of rules and procedures governing the conduct of disposition of electronic records. The rules and procedures act as a control on the activity of carrying out the disposition of records. These rules and procedures include:

- procedures for carrying out disposition (e.g., roles and responsibilities of the creator and the preserver)
- rules for disposition (e.g., acceptable formats for transfer, means of transmission of records, etc.)
- procedures for reporting about disposition activities (e.g., character and volume of records acquired and/or destroyed)

4.5 Appraising Electronic Records (A2)

When applied to any given body of records, selection can be broken down into two main processes. First, a decision is made with respect to the records' disposition, and then that decision is implemented, that is, the records are transferred or otherwise disposed of. Furthermore, the creation of information "packages" to document the appraisal decision and the records to be preserved is crucial to allow for the performance of other archival functions, such as preservation and description. Within the larger context of the selection of records, therefore, appraisal is the activity during which relevant information is gathered and compiled, and a disposition decision is made.

We have viewed appraisal as being made up of four distinct activities: compiling information about the records and their contexts, assessing the value of the records, determining the feasibility of preserving them and finally, making the appraisal decision. This breakdown is based on a decomposition of appraisal into its logical component activities or functions, and it is not meant to specify a precise workflow. It does not make any assumptions about the organizational setting in which the activities take place. It does, however, assume that the continuing value of records may very well differ from their operational value to

their creator, and that continuing value should be determined according to a different set of criteria from that for operational value.

Appraising a body of electronic records is to decide on their disposition. If they are deemed to serve some enduring need of their creator or society, the records will be preserved. One common way of doing this is by transferring them to an entity, such as an archival institution or program responsible for the records' continuing preservation. It is also possible that the creator will preserve them indefinitely, possibly by an archival unit, possibly under the supervision of an outside archives authority. If the records are not deemed valuable, they will be destroyed or, perhaps, be alienated to the care of some other entity.

4.5.1 Compiling Information

In order to conduct an appraisal, the person or persons conducting the appraisal (the appraiser) needs information drawn from reading the form and content of the records, and information about the records' various contexts (juridical-administrative, provenancial, procedural, documentary, technological). The appraiser gathers, organizes and records this information as a vital part of the process of determining disposition of the records. Information may come from publicly available sources, as well as be obtained from the creator's personnel or documentation, and from the records themselves. The precise nature and scope of the information required depends on the particular appraisal methodology and criteria that the preserver has implemented.

It should be stressed that inferences about the continuing value of the records and about the grounds for presuming them to be authentic is accumulated during this vital activity of appraisal. Referring to this activity as compiling information may mislead. Appraisal must rest on a foundation of solid research, which will assist in performing several of the activities we have identified, particularly assessing the value and the authenticity of the records, and identifying the digital components that have to be preserved.

4.5.2 Assessing Value (A22)

The archivist uses the information gathered and compiled to determine the capacity of the records to serve the continuing interests of their creator and of society. The archivist answers the question: "How valuable are these records? How important is it to preserve them?" The output of that activity is an assessment of the continuing value and authenticity of the records, as well as information about the criteria that were used to make that assessment and how they were applied. This assessment may be further decomposed into three activities: assessing the continuing value of electronic records, assessing their authenticity, and determining their value.

4.5.3 Assessing continuing value

This first activity results in a statement of the reasons why the records should or should not be preserved, according to the criteria decided upon by the preserving institution. Because it involves values and judgment, appraisal may be performed differently according to different national or intellectual traditions, juridical systems (including legislation), value systems, and theoretical choices. Archivists engage in heated debates about appraisal criteria and methodologies, and for good reasons. As an example, one could study the records themselves and determine the various elements of them that are likely to give them continuing value, for example, their usefulness for legal purposes, their value as evidence of the functioning and organization of their creator, or their potential for research. Another approach, particularly useful when there are vast amounts of records, created during complex, intertwined processes, is to start by appraising not the records themselves but the functions performed by the records creator, to determine which ones should be documented for posterity, and then finding out which records better reflect the accomplishment of these functions and their impact on society. Since our goal here is to come up with a model of the appraisal activity that applies in a number of different contexts, we deliberately omitted specifying which criteria or values, strategies, and methodologies should be employed.

4.5.4 Assessing authenticity (A222)

A second component in the assessment of value is an assessment of the records' authenticity. The appraiser must establish the grounds for presuming their authenticity. He or she must ensure that the records' identity (for example, parties involved, date, subject matter, and archival bond) is preserved, and must ascertain the degree to which the records' creator has guaranteed their integrity, by making sure that the records remain intact and uncorrupted. The questions to be asked of the records at this stage correspond to the "Benchmark Requirements Supporting the Presumption of Authenticity of Electronic Records" defined by the Authenticity Task Force of InterPARES in the *Requirements for Assessing the Authenticity of Electronic Records*. Answering them requires an in-depth knowledge of the records, the electronic systems they reside in or were created in, and the wider context of their creation and use. For example, such an important element of identity as the author of the record may in fact be found in the provenancial context (the owner of the system) rather than on the face of the record. Integrity may be maintained through safeguards built into an integrated electronic record keeping system (the technological context of the records), or it could be insured through policies, procedures, and practices in the environment of the electronic system. Examples would be physical restrictions on access, policies on access privileges, procedures for data entry and validation, as well as procedures for backup and storage in different locations. The benchmark requirements give full details of the analysis required to assess authenticity.

Therefore, the first step for the archivist is to compile the evidence supporting the presumption of authenticity. That evidence must then be measured against the

benchmark requirements. If that evaluation does not produce a high presumption of authenticity, the archivist must try to verify authenticity by other means, such as comparing different versions or copies of the records, examining system audit trails, or interviewing personnel involved in the creation, use, and preservation of the records. The resulting assessment may affect the determination of the records' value. That information is also crucial to understanding and using the records once they have been transferred to the preserver. Future users of the records must know how well founded the presumption of authenticity of the records is, and what information that presumption is based on in order to make their own assessment, long after the fact and when accumulating relevant information is likely to be difficult if not impossible.

4.5.5 Determining Value

The appraiser's assessment of the records' value reflects continuing value and authenticity. However, the impact of authenticity on the archival value of records is not straightforward, and begs some explanation.

For example, let us suppose that an objective of appraisal is to identify records documenting a process or function performed by the records' creator and deemed worthy of long-term preservation. To do so, an appraiser identifies records that will allow the preserver to maintain an accurate reflection of that process or function. If the records creator were performing a function that had a very high impact on society, and its record-keeping practices were very poor, the archivist would most probably still want to document the function by acquiring the appropriate records. Furthermore, if evidence of poor record keeping practices and of possible willful or fraudulent tampering with the records comes to light during appraisal, that might make it more important to preserve them, in order to attest to that.

Assessment of how authenticity affects value of electronic records is largely a matter of gathering and evaluating evidence of what has happened to them during the course of their existence prior to the time of appraisal. Of course, there is a prima facie case for presuming records to be authentic if their creator relies on them in the usual and ordinary course of business. Nevertheless, in cases where the records no longer reside in their original environment through, for instance, conversion or migration, it is necessary to determine whether what is being appraised is what originally existed and whether changes to the records have seriously impaired their ability to act as evidence of the activity that generated them. In cases where the chain of custody and preservation has been broken or where migration has resulted in missing records, missing parts of records, or inadequate or inaccurate documentation of changes, there may be good reason to suspect the value of the records. If the appraiser has good reason to suspect that the records no longer reflect what they were at the time of their creation and primary use, he or she may decide not to preserve them. Another case in which authenticity is important is when the value of the records resides in the accuracy of the information they contain, such as with survey or

scientific data, rather than in how well they represent the process during which they were created.

Thus, the archivist must assess both the continuing value of the records to their creator and society and the authenticity of the records in order to determine their overall value, and decide how important it is to preserve them or not.

4.5.6 Determining Feasibility of Preservation (A23)

Assessing the value of the records is not enough, however. The appraiser must also determine the feasibility of preserving them as authentic records. More precisely, the appraiser must decide whether the digital components embodying the essential elements that confer identity and ensure the integrity of the records can be preserved, given its current and anticipated capabilities. This determination is based on the same type of information from the records and about the records that is used to assess their value, but it also requires knowledge of the preserver's current and anticipated capability to preserve electronic records. This would include the state of preservation knowledge, hardware and software capabilities, staff expertise, and financial resources. That information is actually provided by the preservation function. The result of this determination is information about the resources and technical capability required for continued preservation of the records.

The activity of determining the feasibility of preserving authentic electronic records breaks down into three phases.

- The appraiser determines both the record elements containing informational content and those elements that need to be preserved according to requirements for authenticity, as formulated by the Authenticity Task Force's benchmark requirements.

- The appraiser identifies where these crucial record elements are manifested in the digital components of the electronic record.

- The appraiser reconciles these preservation requirements with the preservation capabilities of the institution that is responsible for the continuing preservation of the body of records being appraised.

This feasibility determination gathers and records technical information that is necessary to accomplish preservation of the individual elements conveying both the intellectual content and the authenticity of electronic records being appraised. This information also includes the projected cost of preservation and an indication of whether or not the preserver has the capability to preserve the records in question.

The first activity in determining the feasibility of preserving a body of records being appraised is to determine the record elements to be preserved to ensure

the authenticity of the records. This activity identifies the extrinsic and intrinsic elements of form, as outlined in the benchmark requirements, and the elements of content of electronic records that need to be preserved in order to maintain their authenticity over time. Depending on the design characteristics of the system that produced the records, these elements of form and content may be observable on the face of the record, in metadata associated with the record, or implied in contextual information associated with the records' creation. This contextual information relates to the legal and organizational system in which the creating body belongs; the creating body's mandate, structure and functions; the business procedure in the course of which the record is created; the fonds to which the records belongs and the fonds' internal structure. This internal structure comprises the relationships that link each record incrementally to the previous and subsequent ones, and that convey meaning to the records.

There is other relevant information, in addition to that about the form and content, that also aids in determining the feasibility of preserving authentic electronic records. In particular, the appraiser needs information about technological context of records in order to understand how they were generated. This would involve gathering and analyzing information about the electronic system itself, the hardware, software, operating system, and the type of files created—for example, word processing files, image files, and so on. This information is normally gathered as part of the process of compiling information to support the activities of selection, but it is important to note its special relevance in the essentially technical exercise of identifying records elements and digital components.

An archival institution's rules and conventions for appraisal, that is, its appraisal strategies, affect this determination. Indeed, appraisal strategies are taken into consideration at all three stages in determining the feasibility of preservation.

The activity of determining the record elements to be preserved can be illustrated by using one of the InterPARES case studies. The Canadian Intellectual Property Office [CIPO] has a system called TECHSOURCE, which contains a variety of records produced during the patent-granting process. One very important record in the TECHSOURCE system is the patent application, a legal document that constitutes the first step, or act, in the process.

In the act of determining the feasibility of preserving authentic patent applications (or other legal records) maintained in this system, the appraiser would be particularly concerned about the rigor with which the creator met authenticity requirements in their creation. This is typically accomplished via controls embodied in the TECHSOURCE system, and in external procedural controls that were specified during the system's design. These system design requirements constitute the measures CIPO felt were needed to preserve the identity and integrity of the electronic records in the system.

These requirements are often expressed in the intrinsic and extrinsic elements of form of records. Preservation of these elements of form maintains the records' authenticity over time and across technologies. In the case of a patent application, certain extrinsic and intrinsic elements such as the application's standard format, and the chronological date and time of receipt by CIPO must be protected from tampering. In fact, such a requirement is stipulated in the Canadian *Patent Act*. Intrinsic elements relating to the identity of the record, such as the names of the persons involved and expression of the archival bond in the application number, would also be included.

After considering the records from a system such as TECHSOURCE and their various contexts, the appraiser would determine that a dispositive record (in which the record represents the act) such as a patent application would have many of these elements that need to be preserved in order to maintain its authenticity, and therefore its trustworthiness. This is a critical component of appraisal and the result of this analysis would be a list of intrinsic and extrinsic record elements that must be preserved in order to ensure authenticity.

Once the appraiser has identified both the diplomatic elements of the record that confer authenticity *and* the content elements that need to be preserved, the next activity is to identify how these elements are manifested electronically as digital components. In the analog realm, the extrinsic and intrinsic elements are typically united on the medium; however, this is not so with electronic records. The identified elements in the electronic realm may be manifested in various ways in the electronic record, in what the project calls digital components. As defined by the InterPARES Preservation Task Force, a digital component is "a digital object that contains all or part of the content of an electronic record, and/or metadata necessary to order, structure, or manifest the content, and that requires specific methods for preservation one or more electronic records, and that has specific methods of preservation and reproduction." The concept of digital object has its roots in the object-oriented paradigm, whereby the characteristic of discernment of such an object is that it has particular method(s) associated with it, such as presentation software. This identification of digital components is made using previously ascertained information about the record elements to be preserved along with information already gathered about the record's technological context.

For instance, in CIPO's TECHSOURCE system, standard correspondence generated in the course of the patent-granting procedure is produced by combining standard templates containing formulaic language with attribute information from various tables in the relational database management system. Each of these, the templates and the attribute information, are separate digital object, or components. In the case of the former, word processing software is necessary to invoke the template object and in the case of the latter, database software is necessary to understanding the table and relationships represented by a particular instance of an attribute. The template digital objects contain extrinsic elements of form conferring authenticity (for example, English and

French versions of the formulaic correspondence language). The digital objects representing the table-derived attribute information contain security privilege and workflow information that guarantee intrinsic elements of form by ensuring that only someone with proper authority can issue a particular type of correspondence. In order for the archives to preserve authentic electronic records over time, the appraiser must be aware of what these components are, what records elements are contained therein, and the means by which the elements can be united to reproduce the record in a comprehensible form.

The final stage of determining the feasibility of preserving authentic electronic records is a reconciliation of the record components' preservation requirements with the archives' preservation capabilities. The question is: "Can the components that manifest the informational and authenticity elements be preserved, in light of current and/or anticipated future capabilities of the archives?" Simply put: "Can the preserver preserve these digital components?" This is answered by knowing the preservers current and anticipated capability to preserve electronic records. This information includes the state of preservation knowledge and the institution's hardware/software capabilities, as well as practical matters of staff expertise and financial resources available for preservation services.

The attempt to reconcile preservation requirements with preservation capabilities produces two bodies of information that inform the appraisal decision. The first is information about the digital components to be preserved, both information that would explain where records elements vital for maintaining authenticity are manifested in the (potentially various) components of the electronic records, and what technical information (e.g., invocation methods) about those components would be required for subsequent preservation activities. To use the TECHSOURCE example, the first type of information would include the identification of specific tables within the RDBMS that correspond to specific elements of form conferring both content and authenticity. The second body of information would indicate, for example, what type of viewer software would be needed to view the system's scanned images or what information in the image file headers could be exploited for retrieval purposes. The feasibility of preserving a given body of authentic electronic records would be based on current or anticipated finances and technical capabilities, Equipped with this information as well as the valuation information articulated in the value assessment activity, the ultimate appraisal decision and documentation supporting it is then made in light of the preserver's appraisal strategies.

4.5.7 Making the Appraisal Decision

If the assessment of value determines that records are not worthy of long-term preservation, then the appraisal decision becomes easy. In all other cases, however, the determinations of value and feasibility come together in determining the appraisal decision. One could see it as balancing what the appraiser would like to preserve against what the preserver is capable of preserving and can

afford to preserve. However, that would be simplistic. The balance between value and feasibility rests on an exercise of judgment, on a case-by-case basis. For example, an appraiser could be confronted with a situation where preserving records would be either extremely difficult for technical reasons, or would entail prohibitive costs. But this does not necessarily tip the decision against preserving them. If the records were of extraordinary importance or their preservation were mandated by law, the archivist might look for alternate sources of funding, look for another preserver, or come to an arrangement by which the creator would preserve them, at least for a certain period of time. Nevertheless, preservation capabilities do come into play, because resources are not infinite, and choosing to preserve any given body of records often affects decisions made about other records.

The outcome of this decision-making is of course an appraisal decision, which sets out the disposition of the records. The decision is made up of two parts. First, it must list *what* must be transferred to the preserver, or disposed of in other ways (destroyed, transferred to an entity other than the preserver, etc.). The list is laid out at a level of detail appropriate for the record creator to be able to carry out the disposition. Depending on the type of electronic records, and the precision of the records management system, this could mean a high-level description of records (e.g. based on their functional context or their classification), a list of record elements, or a detailed list of digital components. Ultimately, however, persons effectively carrying out disposition need precise instructions and a list of digital components.

In addition to the list of records and digital components, persons responsible for carrying out the disposition of records must be provided with information specifying *how* and *when* disposition must be effected. That includes the responsibilities of each party, and interim measures, such as a monitoring schedule. The terms and conditions of transfer documents the conditions of the disposition the records, as well as more general clauses that apply to all records (such as rules about the frequency of monitoring, etc.). These general clauses are established as part of the management function in the form of disposition rules and procedures.

If all or some of the records appraised must be preserved, the content of the appraisal decision, as well as any further relevant information about the records' technological environment, must be included in an information package for people responsible for continuing preservation.

Finally, the appraisal process must produce documentation explaining and justifying the appraisal decision. It characterizes the various contexts of the records that were relevant to the decision, explains the methodology and criteria used, details the research method, presents the assessments of value and of feasibility, and outlines rationale for the decision. It should make clear which records were preserved and which were not, out of the universe of records

created. This documentation is vital for accountability purposes and so that future users of the records understand the records. In fact, it constitutes permanent records of the preserver that must be accessible to researchers wanting information about appraisal and about records selected for preservation. Information about appraisal decisions is also a crucial feedback mechanism for those managing the selection function (especially in devising appraisal strategies and methodologies), and for other archivists engaged in appraisal.

4.5.8 Recommendations on Appraisal

1. Appraisal is a knowledge-intensive and research-intensive activity. Appraisers must be provided with the proper training, tools, information, support, and resources to conduct the necessary research.

2. Accurate and thorough documentation of the appraisal process in its various phases and outcomes is essential. Information about the appraisal decision, as well as about the appraised records themselves, should be considered as an outcome of appraisal in its own right, as much as the appraisal decision itself. That information is required for further archival functions, such as preservation, arrangement, and description, to be performed adequately.

3. The preserver should develop an interview protocol (along the lines of the InterPARES Case Study Interview Protocol or CSIP, which appears as an appendix to the final report of the Authenticity Task Force) to ensure that the relevant information is compiled to determine the records elements that need to be preserved.

4. The preserver should use the *Requirements for Assessing the Authenticity of Electronic Records* as the conceptual basis for its assessment of the grounds for presuming records to be authentic and for its identification of records elements that need to be preserved to ensure authenticity.

4.6 Monitoring Appraised Electronic Records (A0, A3)

4.6.1 Relationship to Other Activities

Monitoring appraised electronic records and the activities associated with this activity are key to securing the continuing preservation of the appraised authentic electronic records. This activity occurs conceptually after an appraisal decision is made and before disposition is undertaken. This placement recognizes that any decision is fixed in time, place, and circumstance. Appraisal decisions need to be revised when required to ensure that the information about the appraised electronic records is still valid, that changes to the records and their context have not adversely affected their identity or integrity, and that the details of the process of carrying out disposition are still workable and applicable to the records.

Logically, the appraisal decision should be monitored to ensure that time and its changes are attended to when disposition actually takes place. Disposition may be immediate upon reaching an appraisal decision, but it might not take place for some time. The appraiser, acting as a monitor of electronic records earmarked for continued preservation, fulfills two important functions. The first is to see that the appraisal decision, the detailed information about the appraised electronic records, and the terms and conditions for transfer required by the preserver reflect contemporary realities. Many changes to the records and their context will require relatively minor revisions to appraisal documentation and to the terms and conditions of transfer. However, in cases where the business processes and related computer systems are significantly revamped or rebuilt, it will obviously be necessary to consider initiating a disposition under the terms of the original appraisal *and*, for the two will likely go together, redoing the appraisal to take into account the radically altered situation appraisal. This kind of "redoing" of appraisal should be distinguished sharply from reappraisal in the sense of second-guessing the valuation of the original appraisal. It is redoing in the sense that one has to begin afresh to appraise what is in fact a new situation of records of a particular creator, the former manifestation of which has in fact ended. It would not be inaccurate to call this "redoing" a new appraisal. However, the need to do so is very likely to go unnoticed, with perhaps disastrous consequences, unless monitoring is part of the selection process.

4.6.2 The Framework for Monitoring

Monitoring takes place within a framework established by specific appraisal strategies and acts upon the appraisal decision in the light of the circumstances of the records and their contexts. The appraiser is more or less constrained by the degree to which the appraisal decision is, for working purposes, embodied in statements of terms and conditions and other information about the appraised electronic records. Among other things, this information should identify the record(s) which are selected for preservation, provide technical information about the electronic system and the digital and record components in that system, specify a schedule for copying, transfer, or other type of process which allows an authorized disposition to take place, and confirm these actions by an appropriate attestation from the authority with the competence to dispose of records officially.

4.6.3 Monitoring Tasks

One of the tasks of monitoring is to see that scheduled dispositions are carried out. The appraiser monitoring keeps up to date information about the appraisal decision, the appraised records, and the terms and conditions of transfer so that, when it comes time to make a disposition, there are no unforeseen problems or difficulties. It is especially important to track have up to date information on how records are manifested in the system, how to effectively destroy those records that are not required to be preserved; and how to acquire, copy, format, and otherwise prepare and package records for continuing preservation.

Effective monitoring maintains the productive tension between the functions of appraisal, carrying out disposition, and preservation. Monitoring ensures that the appraisal decisions and the information about the appraised electronic records meet the needs of carrying out disposition and preservation. Sound records in their digital components will be passed on to the preserver as a product of well-managed monitoring. Adjustments or minor change to the electronic records, either at the level of the record keeping system, or in the broader contexts of document, provenance, or technology may have a direct bearing on the implementation of the initial disposition of electronic records. Such alterations or adjustments in the course of the ordinary business of the creator also may have continuing implications for subsequent dispositions. Monitoring, therefore, regularly confirms that the decision and its related terms and conditions can be and are implemented. Updates to the appraisal decision and associated information about the appraised electronic records are sent to the disposer and to the managers of selection and preservation.

Major alterations to the records, or significant changes in the system, its platform and/or the context of its records might alter the circumstances of the records sufficiently that the original assessment of value and determination of feasibility are no longer sound grounds on which to continue the selection of electronic records for continuing preservation. Another way of looking at it is that monitoring will result in a recommendation to initiate a transfer and redo the appraisal only when major changes take place that cannot be addressed by adjustments to the terms and conditions in the original or updated appraisal decision.

4.6.4 Relationship to Real Situations

Although the previous discussion has been explicit about the conceptual logic connecting activities of the monitor to appraisal and the carrying out of disposition, the model also implicitly suggests related practical steps for the real tasks of selecting electronic records for continuing preservation. The model does not prescribe specific policies, procedures, strategies, rules, conventions, or criteria, nor does it describe the detailed contents of any of these. However, the relationship of parts, the categories of control, the nature of facilities and resources and the types of inputs and outputs required for action suggest what specific information the selector needs to achieve the continuing preservation of electronic records for reference with their qualities of authenticity identified, maintained, and preserved intact.

Monitoring is essentially a matter of the entity responsible for preservation keeping in close contact with the creator to keep track of changes to its records system. The realization of duties, roles and responsibilities are practical matters for organizations to decide. A large national archives, for example, with major responsibilities for the preservation of records for cultural ends, and perhaps with defined roles in the overall management of recorded information resources, will have a very different arrangement of responsibilities as compared to that of a

multi-national private corporation that views continuing preservation as an aspect of its business needs alone. Whatever the goal of continuing preservation, monitoring decisions to ensure that they are implemented is a key activity for any organization.

Those who monitor electronic records must have access to all the components of the appraisal decision. These include information about the electronic records appraised for preservation, other related information of a contextual nature, and all details of the preserver's system, platform and capabilities. In addition, documentation must be revised to ensure that changes made to the initial terms and conditions and recommendations to redo the appraisal are understandable, accessible, and preserved. A fully developed monitoring activity will integrate the continuing and natural changes to records and the systems in which they are kept with the preserver's need to know of changes. Monitoring ensures that selection meets the needs of both the creator and the preserver over the long term.

4.6.5 Recommendations on Monitoring

5. The preserver should move set guidelines for the roles and responsibilities of monitoring appraised electronic records and develop workflows to ensure smooth operation of this activity.

6. The appraisal strategy and disposition rules should take account of the needs of monitoring appraised records.

4.7 Carrying out Disposition of Electronic Records (A4)

To carry out the disposition of electronic records is to effect disposition of the electronic records according to the appraisal decision. This activity is made up of three distinct activities: prepare electronic records for disposition, whether it be for transfer, destruction or otherwise; prepare electronic records for transfer; and transmit electronic records. Disposition is an activity to be carried out by the creating body and/or the agency responsible for continuing preservation. The controls on this activity are the updated appraisal decisions, which are appraisal decisions revised in light of changes in the records and their context, and the disposition rules and procedures developed in the management process. These are the rules governing the process of disposition of both records selected for preservation and records not selected for preservation. Carrying out disposition is a three-step process.

4.7.1 Preparing Electronic Records for Disposition

The first step, preparing electronic records for disposition, includes copying and. If necessary, formatting those selected for preservation so as to prepare them physically for transfer, and/or, if such falls to the responsibility of the preserver, preparing records not selected for preservation for destruction, alienation to another entity, or such other disposition as has been determined in the appraisal

decision. The inputs to this activity are the electronic records themselves and updated information about the appraised electronic records. This includes the information necessary for disposition and continuing preservation of electronic records, including the terms and conditions of transfer. Updated information will result from the monitoring activity that keeps track of the changes to electronic records in the time since the appraisal decision had been first made. In this step in the process, records eligible for disposition are identified and prepared for transfer or destruction.

Therefore, two of the outputs of this activity are electronic records selected for preservation and electronic records *not* selected for preservation. Electronic records not selected for preservation are identified for destruction or disposition to an entity other than the one responsible for continuing preservation. Those electronic records selected for preservation are copied and formatted for transfer to the entity responsible for continuing preservation. A third output of this activity is information about disposition. This is information about the quantity and quality of records selected for preservation and records not selected for preservation, and about the cost of disposition of electronic records, utilized for management purposes. As an output of the appraisal process, this information accompanies the decision made: either transfer of electronic records or destruction (or otherwise).

4.7.2. Preparing Electronic Records for Transfer

The next step, one that either the creator or preserver may take or they make take together, is to package records selected for preservation with the necessary information for their continuing preservation, including the terms and conditions of transfer, identification of the digital components to be preserved, and associated archival and technical documentation needed for their treatment. The relevant information should have already been compiled and recorded during the various stages of appraisal and monitoring. The task at this stage is to extract the information necessary for continuing preservation of the records from the mass of appraisal documentation, and packaging it with the records.

There are two outputs from this activity: the electronic records themselves, prepared for transfer, and information about the electronic records prepared for transfer. Electronic records are copied and, if necessary, formatted for transfer, and associated with the information necessary for transmittal and continuing preservation. Information about the electronic records prepared for transfer spells out the terms and conditions of transfer of electronic records, and identifies the digital components to be preserved together with the archival and technical specifications necessary to guide continuing preservation.

4.7.3 Transmitting electronic records

The third step, the final activity of carrying out disposition is to transmit the records selected for preservation, with the accompanying information necessary for continuing preservation, to the office responsible for the preservation function.

The outputs of this activity include information about transferred electronic records and the transfer of electronic records selected for preservation. Information about transferred electronic records is the record or records providing the information about electronic records necessary to maintain them continuously in authentic form, including the terms and conditions of transfer. The second outcome of the transmit function is the actual transfer of electronic records selected for preservation. These electronic records are copied and, if necessary, formatted for transfer and sent to the office responsible for the preservation function.

4.7.4 Recommendations on disposition

7. As part of its disposition rules, the preserver should work out a standard protocol setting out the roles and responsibilities of the creator and the preserver in carrying out disposition of electronic records.

8. The preserver should develop a standard format for recording the information necessary for continuing preservation that is packaged with transfers of electronic records.

5. Relationship of Findings to Other Research

Although the work to develop a picture of the process of selection of authentic electronic records builds on the general literature on archival appraisal, and on the specific literature on appraisal of electronic records as reflected in the literature review, no other research we know of has delved deeply into the questions we set out to answer. We believe that the picture of appraisal of electronic records afforded by the model we have developed provides the most extensive and detailed account of the process of selection currently available.

The most important relationships of the work of the Appraisal Task Force is of course to the work of the Authenticity Task Force and Preservation Task Force of InterPARES, the main lines of which we have indicated. In this regard, it is worth reiterating that our work depends to a very great extent on the work of the Appraisal Task Force, in particular on its template for analyzing electronic records and its conceptual requirements for assessing authenticity. Readers of this report are encouraged to follow the explanation of the template and conceptual requirements in the “Authenticity Task Force Final Report. “

6. Conclusion

The Task Force set out to determine whether the theory and methodology of appraisal for electronic records differs from that for traditional records, and what role the activities of appraisal play in the long-term preservation of electronic

records. To summarize the ways in which appraisal and disposition of electronic records differs from that for traditional records, it will be instructive to look again at the original research questions in light of the findings, particularly in light of the knowledge encapsulated in the model of the selection function.

1. What is the influence of digital technology on appraisal?

Some of the influences of the digital environment on appraisal simply heighten tendencies already evident in the traditional environment, while others are new.

The need to monitor or keep track of changes in the record-keeping environment is not unknown in the traditional environment. The functions and activities of creators, their internal organization and procedures, including documentary procedures all change over time, with the result that appraisal decisions must be revisited and amended to take account of these changes. By contrast, in the digital environment, changes in the system generating the records can present (at least) three scenarios.

In the first, relatively minor changes to a system may lead to a relatively inconsequential revision to an appraisal and information about appraised electronic records. That is, one can live with the main lines of the original appraisal and determination of disposition. In the second, significant changes in the technological context may require one to adjust the appraisal to take account, for instance, of new work processes and their automation or technological advances. In the third, drastic changes, such as introduction of a completely new system, may lead the appraiser to initiate a disposition under terms of the existing appraisal and, then, of course, a “redo” the appraisal of records in the new system when it is determined to make one. Because much data in the digital environment is dependent for its meaning on a understanding of that environment, deciding the disposition of records in systems about to be outmoded is likely to be an important tactic. In the traditional environment, records committed to paper did not so easily lose important aspects of the original context of creation, even if they migrated into a new record- keeping environment. Nevertheless, it is probably fair to say that monitoring change and determining its effects on selection decisions is nothing new. The need for it is just more pressing in the digital environment.

Something along similar lines can be said about the need to appraise records early in their life, when the appraiser can see a fully operational live system. In fact, modern records schedules, which in effect constitute a series of disposition decisions class by class, are often created before records are created. The difficulty in the digital environment, one discussed widely in the literature reviewed by the Task Force (see Appendix A), is that designers of digital systems, particularly in the early years of office automation, paid little or no attention to questions of the disposition of records. It was this fact, rather than

any inherent characteristic of the digital environment that pushed archivists to suppose that appraisal capability had to be built into the design of systems.

The need to appraise early in the digital environment is, by contrast, vital for quite another reason. Information about the technological context, much of it now contained in the systems themselves, cannot be found or reconstructed, we know from sad experience, even a short time after systems have reached the end of their life. It is exceedingly difficult to assess the authenticity of such records, determine the feasibility of preserving them, and understand them in the future, without this information about the technological context. Once again, archivists are familiar with the difficulties of having to construe the context of the records with little else to speak of it but the records themselves. This is hardly an argument for expecting the acuity of Jean Mabillon (the Benedictine Monk who laid out the concepts and tenets of diplomatics in the 17th century) in all future users of electronic records where information about their technological context is concerned. Rather considerable information about the technological context of the records needs to go along with them through time for them to be intelligible in anything like an acceptable fashion in years and centuries to come. It is a principal task of appraisal to gather this information so that it can be associated with the records.

These somewhat shaded and not entirely novel influences of the digital environment are quite different in kind from the influences on two aspects of appraisal of electronic records: assessing their authenticity and determining the feasibility of their preservation. Archivists rarely assessed authenticity overtly and as a matter of gathering evidence to support a presumption of authenticity such as we recommend be done during appraisal using the benchmark requirements. Those requirements spell out evidence derived in large measure from analysis of the technological context (of the kind spoken about in the previous paragraph) but it is with the end of gauging the play of authenticity in the overall determining of value of electronic records. It is precisely because the digital environment is so frail that this needs to be done. Even less often have archivists gone the extra length, during appraisal, to verify the authenticity of records. Both assessment and verification along the lines recommended in the *Requirements for Assessing the Authenticity of Electronic Records* are likely to become, and should become, the rule rather than the exception.

Still, the piece de resistance of this particular recounting of influences may be found in the activity of determining feasibility. It is here, particularly in determining how record elements are manifested in the digital environment and in identifying digital components to be preserved that the appraiser must be immersed in the technical details of the digital environment. In some case, it may be surmised that, *for reasons of the character of the digital environment*, it will be determined that records cannot be preserved or not in authentic form. Could there be a greater influence?

2. **What is the influence of retrievability, intelligibility, functionality, and research needs on appraisal?**

The Task Force did not investigate these questions directly. It is implicitly clear that part of the exercise of determining the feasibility of preserving authentic electronic records is to ensure that the preserver has the capability to read and retrieve or present them in a form that does not compromise their identity or integrity. We have little to say beyond what is implicit in the final report of the Authenticity Task Force about the question of functionality. Some researchers have suggested that proper preservation of electronic records means perpetuating the functionality of the system creating the records. We have not worked upon the assumption that this is necessary, if the message the record was meant to communicate is preserved and its identity and integrity evident. However, the means by which records are presented to researchers is really dependent on preservation capabilities not on appraisal as such. However, in any given case, should the capability exist to replicate aspects of the functionality of the originating system, then the appraiser would naturally take that into account.

3. **What are the influences of the medium and the physical form of the record on appraisal?**

As the Authenticity Task Force has determined that the medium is in fact part of the technological context and that not all aspects of physical form necessarily need to be reproduced in order to have authentic electronic records, these questions are no longer apposite. They have been proved to be the wrong questions to ask.

4. **When in the course of their existence should electronic records be appraised? Should electronic records be appraised more than once in the course of their existence, and, if so, when?**

These two questions are addressed together because they concern the question of the timing of appraisal. In fact, it is not possible to answer the first of the two with a single answer. For good reason, the Task Force has assumed that records must exist before they can be appraised. It is indeed possible to build records retentions scheduling into the design of electronic record keeping systems, but until records are actually created in the system and can be examined questions around their authenticity and the feasibility of preserving them cannot adequately be made. Of course, it might be the case that scheduling is regarded as the first step in the appraisal process, when continuing value alone is judged. This initial step would then be followed by assessment of authenticity and determination of feasibility, most likely at the time that a transfer of records to the preserver is anticipated.

The ideal scenario as we see it is that an initial appraisal is made, preferably when records can be seen “live” in the system that generated them, the applicability of that appraisal is regularly monitored to take account of changes in

the records and their contexts, with the last monitoring being at or near the time of transfer (disposition). So, yes, electronic records must be appraised more than once in the sense that the dynamic nature of the digital environment means the assumptions and judgments of the appraisal as it exists at any point in time must be validated before disposition action is taken. In short, the idea of monitoring is the answer to questions about the timing of appraisal of electronic records that have been raised in the literature. For a full discussion of opinion on this question, see the literature review in Appendix A.

5. Who should be responsible for appraising electronic records?

As already discussed, one of the basic assumptions of the research is that appraisal is part of the primary responsibilities of the preserver, although obviously, there are nuances, as already discussed, to the way in which responsibility may actually play out in a given administrative setting. We believe that our work buttresses this assumption in several ways.

The preserver has the long term and the interests of other than the current creating body in mind when appraising records. The assessment of authenticity and the documentation generated and preserved during that assessment are actions associated with the preservation function. The assessment and its documentation are preserved for the benefit of future users (whether inside or outside the creating body) wishing to establish the grounds for the presumption of authenticity of the records.

Another argument follows the logic of determining the feasibility of preserving electronic records. If appraisal is not undertaken by the preserver and with the current and expected future capabilities of the preserver in mind, there is the chance that there will simply be a disconnect between appraisal and preservation. It is hard to imagine that the preserver should accept decisions about what it must preserve without having responsibility for making the decision. The methodology of appraisal implied in the model leaves ample room for the interests of the organization creating the records to be taken into account.

Finally, we hope that the complexity of appraising electronic records such as we have indicated makes it abundantly clear that it requires considerable professional expertise to perform. It seems for that reason unreasonable to expect that anyone other than persons devoted to the primary task of preservation, that is, archivists, should be saddled with the responsibility to appraise electronic records.

6. What are the appraisal criteria and methods for authentic electronic records?

The methodology explicit and implicit in the model is our answer to the aspect of this question about methods. The requirements for assessing authenticity as part of assessing the value of electronic records, and the concepts developed for determining the record elements to be preserved and identifying the digital components to be preserved as part of determining the feasibility of preservation, constitute the only criteria that, in our view, can be established to cover all situations. As we have explained, we did not regard it as part of our charge to establish criteria governing assessment of continuing value, because assessing continuing value is so sensitive to the entire context in which appraisals are made.

We are also of the view that we cannot go beyond the conceptual requirements developed by the Authenticity Task Force for assessing authenticity. They in fact provide sufficient criteria for assessing authenticity and for determining the records elements vital for the identity of electronic records. As explained, we did not take it as part of our charge to develop criteria guiding the determination of continuing value. We do recognize that criteria to apply in assessing continuing value should be part of the appraisal strategies of preservers.

Nevertheless, the model of the activities of selection shows that appraisal is a vital first step in long-term preservation of authentic electronic records in innumerable ways. It gathers and synthesizes essential information and evidence to ensure the authenticity of electronic records and to set in motion their disposition and long-term preservation.

7. Summary of Recommendations

1. Appraisal is a knowledge-intensive and research-intensive activity. Appraisers must be provided with the proper training, tools, information, support, and resources to conduct the necessary research.

2. Accurate and thorough documentation of the appraisal process in its various phases and outcomes is essential. Information about the appraisal decision, as well as about the appraised records themselves, should be considered as an outcome of appraisal in its own right, as much as the appraisal decision itself. That information is required for further archival functions, such as preservation, arrangement, and description, to be performed adequately.

3. The preserver should develop an interview protocol (along the lines of the InterPARES Case Study Interview Protocol or CSIP, which appears as an appendix to the final report of the Authenticity Task Force) to ensure that the relevant information is compiled to determine the records elements that need to be preserved.

4. The preserver should use the *Requirements for Assessing the Authenticity of Electronic Records* as the conceptual basis for its assessment of the grounds for presuming records to be authentic and for its identification of records elements that need to be preserved to ensure authenticity.

5. The preserver should move set guidelines for the roles and responsibilities of monitoring appraised electronic records and develop workflows to ensure smooth operation of this activity.

6. The appraisal strategy and disposition rules should take account of the needs of monitoring appraised records.

7. As part of its disposition rules, the preserver should work out a standard protocol setting out the roles and responsibilities of the creator and the preserver in carrying out disposition of electronic records.

8. The preserver should develop a standard format for recording the information necessary for continuing preservation that is packaged with transfers of electronic records.

InterPARES Project

International Research on Permanent Authentic Records in Electronic Systems

Appraisal Task Force Appendices

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InterPARES Project

International Research on Permanent Authentic Records in Electronic Systems

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APPRAISAL OF ELECTRONIC RECORDS:

A REVIEW OF THE LITERATURE IN ENGLISH

a report prepared for the Appraisal Task Force

Date
May 30, 2000

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A REVIEW OF THE LITERATURE IN ENGLISH

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1.0 Purpose and Scope

The purpose of this paper is to review the literature in English written on the subject of appraisal of electronic records in order to refine the research questions in Domain II of the project. As a preliminary measure, those questions have been articulated as follows:

- What is the influence of digital technology on appraisal?
- What is the influence on appraisal of retrievability, intelligibility, functionality, and research needs?
- What are the influences of the medium and the physical form of the record on appraisal?
- When in the course of their existence should electronic records be appraised?
- Should electronic records be appraised more than once in the course of their existence, and, if so, when?
- Who should be responsible for appraising electronic records?
- What are the appraisal criteria and methods for authentic electronic records?

The last of these questions expresses the overall aim of the work in this domain. That broad question needs to be refined into more specific questions around which pointed investigations can be made. It should also be noted that our work is not addressing appraisal criteria specific to juridical systems and cultures but rather how to conduct appraisal to ensure that records of enduring value are actually preserved in authentic form. This review aims to begin the process of doing that. Once the questions are agreed upon, the intention is to review policy and procedure documents detailing existing practices in a select number of institutional settings where there has been a significant experience of actually appraising electronic records for long-term preservation. Following upon the completion of the case studies of electronic records undertaken by the Authenticity Task Force of the project, which will provide an empirical base for analysis of appraisal considerations, models of the entities and activities involved in appraisal and a related glossary will be developed. When the knowledge gained in these investigations is done, it will be combined with the knowledge achieved in the work to develop a typology of electronic records an in the study of storage media to develop methodologies and strategies for appraisal of particular classes of electronic records. *At this stage, it is an open question what those methodologies and strategies should be*.

Because the aim is to refine the research questions, the authors did not attempt to provide a comprehensive review of everything said about the subject, but rather to summarize the important issues. They concentrated on literature specifically on appraisal of electronic records, although some reference is made to the general discussion of management issues for current electronic records. References to the literature are restricted to marshalling some measure of support for the refinements suggested.

2.0 Organization of This Paper

The author of the paper is Terry Eastwood (Associate Professor and Chair, Archival Studies Program in the School of Library, Archival and Information Studies at the University of British Columbia) with contributions from three student research assistants. The research assistants were all in the second year of the Master of Archival Studies program. They worked during the period January to April 1999 for the Canadian Research Team under the terms of its grant from the Social Science and Humanities Research Council of Canada. This paper is organized into the following sections:

- Changing Environment of Electronic Records. This section aims to characterize how the computing environment has evolved over time and what implications this has for appraisal
- Factors Affecting the Archival Management of Electronic Records. This section aims to characterize certain of the most prominent factors that have affected the ability of archival institutions to appraise and preserve electronic records.
- Tactical and Methodological Issues and Questions. This section addresses three questions: when should electronic records be appraised, what should be appraised, and who appraises?
- Technical Analysis: This section reviews what the literature says about evaluating technical aspects of electronic records.
- Content Analysis: This section reviews what the authorities say about evaluating content.
- Summary of Conclusions.

3.0 Changing Environment of Electronic Records

The Committee on Electronic Records of the International Council on Archives summarizes the change in the technological environment in these words in its *Guide for Managing Electronic Records from an Archival Perspective*.

> The evolution of information technology falls into three overlapping phases: the mainframe era, the era of the personal computer (PC), and the networking era. Each succeeding innovation in information technology made new uses for information technology feasible without necessarily displacing older systems. Depending on when computers were introduced into an organization, archivists may

> encounter electronic records that were accumulated under any of the phases.[11]

In the first phase, "data were entered into the computer system, processed in batches, and then output was used in summaries, bills, accounts, and other business documents or in reports and analysis of scientific research." For the most part, one administrative entity purchased the expensive hardware required, another programmed it, and yet another decided "the tasks that lent themselves to automation." The ICA Committee concludes that:

The prevailing view of electronic records at the time was they were special media records which were primarily valuable because of their informational content while records that were needed for evidence of actions and decisions were printed on paper and stored in established filing systems. 12

In the second phase, beginning with the introduction of the first personal computers in 1981, computing rapidly decentralized as action officers acquired their own computers and used them, particularly for word processing. The ICA *Guide* notes that "the rapid proliferation of text and data files" made inventorying, appraising, and preserving electronic records difficult, and turned [archivists] attention to the question of developing policies and practices to ameliorate this decentralized and uncontrolled situation.[13]

"The next significant advance in computing," the Guide says, began in the mid-1980s with the rapid integration of telecommunications and computing into vast computer networks." Mainframe computers still handled large databases and highly complex operations, but the client-server approach allowed organizations to combine "the autonomy that the PC offers with some of the central controls of the mainframe environment," with important implications for records creation. As the Guide puts it,

> With the growth of networking and the development of paperless transactions, archivists have become increasingly concerned about the long-term preservation of electronic records. These new archival concerns arise out of both the capabilities of the new technologies and the ways in which these technologies are being used in organizations.[14]

These changes in the application of computing to work processes have had a profound influence on the way organizations operate. The result has been

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[11] International Council on Archives, Committee on Electronic Records, *Guide for Managing Electronic Records From An Archival Perspective* (Paris: International Council on Archives, February 1997), 13. From now on, cited as *Guide.*
[12] *Guide*, 14.
[13] *Guide*, 15.
[14] *Guide, 15*.

"changes in workflow, communications, and formal organizational structures" that can "affect the provenance, ownership, and physical location of records." Many organizations are rapidly working towards a situation in which "electronic records become the most complete evidence of the business process and paper records begin to function as convenience copies." In this rapidly evolving environment, "archivists have been driven to examine a broader set of records management issues in order to carry out the archival function in the digital environment."[15]

The Guide also discusses the problem of technological obsolescence. Both hardware and software have a relatively short life.

Organizations replace their systems when their supplier ceases to support an obsolete system or when new products offer advantages over older software. To ensure that records created in the old system will remain available, understandable and usable to users of the new system, the organization must migrate its older records to the new system. Transferring records from older proprietary systems – called legacy systems – to current technology may require substantial reformatting and restructuring of record. As long as information technology continues to evolve and organizations find new ways to apply computers to information handling and communications, archives will have to be prepared to offer advice and guidance in a dynamic environment.[16]

Elsewhere, the *Guide* says that " in order to preserve electronic records, they must from time to time be migrated to new technological platforms (i.e., be copied to new storage devices and in some cases converted to a format suitable for new computer systems.)[17] However, a major issue for the research is whether and when conversion or migration will be necessary, and whether and when other strategies of long-term preservation may be appropriate.

The implications for appraisal of this situation are many. First, because the products of the various phases differ greatly, somewhat different approaches may be needed for each. An objective of this part of the research should be to detail the ways in which these approaches need to vary. This would constitute one of the ways in which the technology has an influence on appraisal. Of course, it may be that there is no fundamental difference, only a different strategy. This remains to be seen. Certainly, it is an important task to distinguish the common elements of appraisal of electronic records from the particularities in given classes of cases, assuming that those classes can be identified and characterized. It is also clear that the problem of technological obsolescence impinges on appraisal of records for long-term preservation as it does on everything else to do with electronic record keeping. What is not clear are the methods to be employed in given cases for long-term preservation and what implications this decision-making has for appraisal.

[15] *Guide*, 16-17.
[16] *Guide*, 18.
[17] *Guide*, 25.

4.0 Factors Affecting the Archival Management of Electronic Records

Almost all writers on appraisal of electronic records begin, as Harold Naugler did in his ICA RAMP study, *the Archival Appraisal of Machine Readable Records*, published in 1984, by identifying "a number of factors which could have a major impact on [appraisal] of electronic records." He identifies them as follows.

- Legislation may prevent or inhibit archives from acquiring electronic records.
- Data held by an agency might belong to another body.
- The data may be encumbered by contractual agreements.
- Source agencies may have poor data management programs.
- It is difficult to schedule records after systems are designed and implemented.
- Archivists and records managers are not trained to appraise electronic records.[18]

Some of these factors are obviously connected with the trends and developments discussed in the previous section, but others need some elaboration. The legal issues identified by the ICA *Guide* are:

- the legal definition of a record, especially when it does not encompass records in electronic form;
- laws that do not accept electronic records as legitimate evidence in legal proceedings;
- legislation that defines the role of archives strictly as a custodial one;
- laws and policies which impose long waiting periods before the archives can appraise records or influence their disposition;
- legislation governing privacy and access to records;
- alienation of [public] records from public oversight.[19]

The point here is that these legal impediments often make it impossible for archival institutions to conduct appraisal to select and acquire electronic records.

The question of ownership and provenance of records has, if anything, become more complicated since Naugler wrote. In today's world, as the ICA *Guide* makes clear, "powerful new networks provide rapid communications and make it possible to share information across geographical boundaries as well as across organizational hierarchies."[20] Careful analysis of these contextual circumstances, including contractual arrangements, will have to be taken into account in appraisal. The template for analysis developed by the Authenticity task force

[18] Harold Naugler, *The Archival Appraisal of Machine Readable Records: A Ramp Study with Guidelines* (Paris, Unesco, 1984), 8.
[19] *Guide*, 19.
[20] *Guide*, 16.

takes into account the various elements of context. The result should be case studies that produce a rich sense of the contextual factors that need to be taken into account during appraisal.

Perhaps by far the greatest concern of archivists has been about records and information management practices as they relate to electronic records. By the late 1980s and early 1990s, archivists were beginning to see that their attempts to integrate electronic records management into the traditional pattern of records inventory, appraisal, accessioning, preservation, and reference were not working, for a variety of reasons not necessarily associated with the applicability of those patterns. These concerns were expressed from very many quarters. The experience of the State Archives of New York, as communicated by Margaret Hedstrom and her colleagues in numerous articles, represents them fairly well. As Alan Kowlowitz argues, "the most pressing issues facing electronic records appraisal today are not narrowly technical and methodological but broad program development and information management issues…." He also observes that "progress in addressing these issues has been glacial" in organizations and agencies.[21] They concluded from their experience that

- "the ability of the archives to preserve electronic records was dependent on improved records and information management programs in state agencies" and on a clear statement of the archives jurisdiction in the matter;
- an integrated system for managing electronic and hard copy records was needed on a organization wide basis;
- schedules had to be developed at the time of design of systems;
- the archival authority needed more resources to tackle electronic records problems;
- policies and procedures are needed to overcome the tendency for every user to become 'an information manager', deciding how to set up his or her electronic filing systems, what information to store there, and how long to keep it."[22]

In short, archivists have had to concentrate on getting organizations and their various arms to integrate electronic records management concerns into the broader picture of both records and information management. They have also been concerned to develop a clearly understood role for themselves in the process and to convince the powers that be to devote sufficient resources to the archival task. In many cases, the situation Hedstrom and Kowlowitz describe explains why so few institutions have actually appraised electronic records, data, or information.

[21] Alan Kowlowitz, "Appraising in a Vacuum: Electronic Records Appraisal Issues – A view From the Trenches," in David Bearman, ed., "Archival Management of Electronic Records," *Archives and Museum Informatics Technical Report No. 13* (1991): 31.
[22] Margaret Hedstrom and Alan Kowlowitz, "Meeting the Challenge of Machine Readable Records: A State Archives Perspective," (1988), 22..

5.0 Tactical and Methodological Issues and Questions

Much of the archival literature on electronic records in general and the specific literature on appraisal are concerned with questions about the desirability and nature of the involvement of archivists in design of systems for generating and keeping current electronic records. As the ICA *Guide* observes, “it seems less clear in the electronic environment that the record creator can be relied upon actually to create a record.” Archivists have therefore looked to insinuate themselves into the design stage of electronic systems, to a time before it has been traditionally assumed the life cycle begins.[23] This early involvement is justified on more than the grounds of appraisal, of course, but it has also been supposed that, as the *Guide* says, “retention requirements based upon archival considerations should be built into an electronic system at the time of its design.” The ICA document observes that this requirement “suggests that new approaches to appraisal and selections tasks may be warranted,” but that they should be “directed toward the functions of the originating body, the business processes and activities through which those functions are carried out, rather than towards the records themselves.”[24]

Even though there is general agreement on the need to situate appraisal in this manner, it is useful to review some of the discussion, for it raises some important issues

5.1 When should electronic records be appraised?

Early in the debate about appraisal of electronic records, Trudy Peterson recognized that with “records of the new technology” the potential to lose information was an aspect of computer systems and thus a practical concern for archivists, if not a theoretical one. She says that "we all know that paper records are lost because records creators throw them away, but it normally takes a certain amount of decision making to haul files from a file drawer and dispatch them to the trash. With machine-readable files, however, the elimination of records may be built into the system."[25] Because a complete view of the record creation process may not be possible if one "asks for a yearly cutoff of . . .[a] file, all you will get will be a ‘snapshot’ of the operation at the time of cutoff."[26] As a consequence, she further argues that if "the archivist wants to maintain the records of stages of a project, he must work with the computer programmers to capture it all."[27]

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[23] *Guide,* 26-27.
[24] *Guide*, 27.
[25] Trudy Huskamp Peterson, "Archival Principles and the New Technology," *American Archivist* 47 (Fall 1984): 386.
[26] Peterson, 386.
[27] Peterson, 386.

Peterson is speaking of the kinds of databases or data files common in the first phase of computing. Despite what she says, there are important theoretical issues of whether such databases or data files contained records or not, with important implications for appraisal. In particular, Peterson's suggestion that the aim is to capture "a complete view of the record creation process" is problematical. There is in fact no way to "capture" a dynamic database, but neither is there a way to capture a "complete view of the records creation process" except insofar as the records selected for retention give it. It is one thing to ensure that records in the electronic form are set aside and controlled properly so that they will be there and can be managed throughout the various stages of their existence. It is quite another to go into the system and extract information *ex post facto* for preservation purposes.

Catherine Bailey discusses the viability of the life cycle model for electronic records appraisal in her article "Archival Theory and Electronic Records." She argues that the difficulty with the life cycle concept rests with the common identification of active, semi-active, and inactive with "physical state or activity."[28] With electronic records, the way they are stored on computer systems makes the traditional view of the life cycle difficult to apply. It is necessary to view the life cycle in a fashion that will facilitate the scheduling and appraisal of electronic records. [29] Like Peterson, she argues that archivists will have to intervene early in the process:

> They cannot wait until inactive electronic records are offered to them for appraisal, as they might have for paper records; too many computer records have vanished by then, and the documentation necessary for their proper appraisal has been lost, destroyed, or is hopelessly outdated. The sheer volatility of electronic records should be a powerful inducement for archivists to accept increased involvement in the scheduling process, beginning at the systems design stage. Again, however, this is not an issue of new or revised theory or principle, but merely one of timing and strategy.[30]

She sees an even more serious problem in the growing trend towards data resource management in which many entities "combine their resources to create

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[28] Catherine Bailey, "Archival Theory and Electronic Records," *Archivaria* 29 (Winter 1989-90): 183.

[29] She suggests that "the answer to the question lies in treating the life cycle model on a more conceptual level. If archivists consider the life cycle as an abstract expression of the legal authority over a record rather than a designation of its physical state or activity, then the differences between a paper record an electronic record disappear. It does not matter whether a record is located on a disc pack in an organization or department, on storage tapes in a record centre tape library, or on tapes or disks in an archives; its administrative and, especially, legal status is still determined by the amount of use it gets and the jurisdiction that controls it." Bailey, 183.

[30] Bailey, 184.

and maintain a single large system or database which can serve all their diverse but related needs at once.

Electronic information then becomes so fluid that not only does it become difficult to determine the active, semi-active, and inactive stages of records, but it also becomes next to impossible to determine the provenance of records. There is no longer a single application on which to focus attention, so that the system overview approach becomes complex and difficult. Where [and when, we can add] do archivists begin to schedule the contexts of these shared databases? Can they legitimately break them down into smaller units fit for individual schedules or overviews, or will this act destroy the true nature of the system? Or will such a system require a scheduling technique completely different from that of the system overview? [31]

She then outlines a three-step appraisal methodology framed within a life cycle concept. The first step would require "a greater emphasis on the appraisal of computerized information as soon after its creation as possible," presumably by some method akin to scheduling. In the second step, or stage of appraisal, "if a machine readable record has already been assessed as being valuable in the first stage of appraisal, then it will be necessary to separate it from the non-essential records around it and much time and energy will be saved." The third stage outlined by Bailey is, in essence, a reappraisal step. She reasons that because "records can conceivably lose their value, data files should be reappraised occasionally to ensure that their archival values have not been overemphasized."[32] It should be noted that, like many authors addressing the subject, Bailey considers that the first stage in the appraisal process is most important, because there is no guarantee that all electronic records will survive until the second stage when inactive records are appraised.

However, many of the writers who argue for new appraisal methodologies emphasize the need to abandon the traditional life cycle concept in favor of the continuum approach to records management. Glenda Acland argues that within the traditional life cycle approach, the archives is positioned at the end of a process, and can apply traditional archival theories only to what is passed on by the creator. This is "a passive role, an accepting role," and "the archivist is the undertaker who then acts as keeper for selected 'permanent' material, the selection often being de facto as well as archival." Acland, in fact, asks whether "the management of current records is simply the first stage in archival methodology or whether the archival concern, fundamentally the requirement to preserve permanently valuable records, is merely the first step in a comprehensive records management process." Clearly coming out in favor of the latter, she argues that "the split between the records management and the archival phases of record keeping is no longer an acceptable alternative, it is no

[31] Bailey, 184.
[32] Bailey, 186.

longer sufficient to exclude archivists from an active role in the process of data or information management."[33]

Greg O'Shea, one of Acland's Australian colleagues, argues similarly that "the need for archivists to intervene in the records creation process has never been stronger than it is with electronic records.[34]

> It is precisely at this last point that the principles and practices of Archives and Records Management merge. The need to adopt this interventionist approach at the very outset of the records life cycle, which for electronic records is the systems development phase, in order to preserve the archival record finally kills the notion that archivists are passive spectators at the genesis and over the formative years of the life of the record.

Essentially, O'Shea argues that appraisal decisions will have to be built into the system before the records are created. He suggests that "archivists in the appraisal process for electronic records now need to specify [which] records are [to be] kept."[35]

According to O'Shea, this involves working closely with information technology managers "who will (a) physically capture the records and (b) develop or redevelop systems to ensure that records are identified and retained for the appropriate period of time."[36] The fact that archivists work with systems design experts requires a shift from appraisal of the record to appraisal at the logical level, "i.e. the high-level diagrammatic representation of the system where it is relatively easy to see what functions the systems manages and where records may be kept."[37] Through this high level analysis, O'Shea argues, records worthy of preservation can be identified before creation, and retention of records built in to the system.

Another Australian, Michael Hoyle, speaking in the context of a particular case of appraisal of reports on cash transactions tendered to a special agency supporting the work of tax authorities, questions how much can be done at an early stage in the development of a system. “It seems that it would be more productive for the Archives to have an advisory role at the early stage…. Rather than taking a detailed appraisal … perhaps an overview could be prepared …

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[33] Glenda Acland, "Archivist -- Keeper, Undertaker or Auditor: the Challenge for Traditonal Archival Theory and Practice,” in *Keeping Data: Papers from a Workshop on Appraising Computer-based Records*, ed. Barbara Reed and David Roberts (Sydney: The Australian Council of Archives and the Australian Society of Archivists Incorporated, 1991), 116. From here on, this volume is cited as *Keeping Data*.

[34] Greg O'Shea, "The Medium is not the Message," in *Keeping Data*, 76.

[35] O’Shea, 88.

[36] O'Shea, 77.

[37] He argues further that " functional/logical level appraisal, is seen as producing simple, integrated and non-redundant definition of the permanent records that is independent of frequent system and software changes." O’Shea, 77.

with a view to assessing the system's acceptability in terms of the Archives Act." Later, when the system has matured and action officers have a better understanding of its uses, appraisal can be undertaken.[38]

Charles Dollar also urges archivists become involved in information systems design to ensure that appraisal concerns are met. "From an archival point of view, the appraisal and retention functionalities should be incorporated into the design of information application systems in order to ensure the identification and retention of records of continuing value." He goes on to say that "one of the most useful contributions archivists can make to information systems design is to incorporate into it the concept of the life cycle management of recorded electronic information." However, Dollar notes that archivists have not done enough to analyze the life cycle concept in a way that it can be adapted to the electronic environment. "Consequently, archivists have not articulated clearly the functional requirements of the life cycle of recorded information that could become part of the design of a complex information system."[39]

More recently, Hans Hofman has argued similarly that, in establishing the groundwork for managing archival records, archivists need to take an integrated approach to the management of electronic records. More specifically, he argues for a management regime based on three interrelated factors or layers. The first layer is "an intellectual infrastructure for inspection, appraisal and intellectual control;" the second "a technological infrastructure for records creation, preservation and research/service delivery;" and the third an organizational infrastructure to facilitate the carrying out of the first two structures. This framework must encompass all agencies.[40] As such, the archives should be involved in the management of records at all stages of the life cycle:

> The ideal situation would be if archives [institutions were] involved from the moment that electronic records are created or (even better) when the information system is conceived and developed. This would only be necessary for those records that are of archival value. To know this, the archives have to develop an appraisal method that allows them to determine this as early as possible.[41]

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[38] Michael Hoyle, "Case Study: Cash Transaction Reports Agency," in *Keeping Data, 83-84.*

[39] Charles Dollar, *Archival Theory and Information Technologies: the Impact of Information Technologies on Archival Principles and Methods* (Macerata, Italy: University of Macerata, 1992), 58.

[40] Hans Hofman, "Off the Beaten Track: the Archivist Exploring the Outback of Electronic Records," in *Playing for Keeps: the Proceedings of an Electronic Records Management Conference hosted by the Australian Archives, Canberra, Australia, 8-10 November 1994*. Accessed at http://www.naa.gov.au/govserv/techpub/keeps/hofman.htm. , p. 5. For an explanation of the PIVOT project see, Peter Horsman, "Appraisal on Wooden Shoes: the Netherlands PIVOT Project," *Janus* (1997.2): 35-41.

[41] Hofman, 6

An important discussion that has emerged from the appraisal debate, particularly as it relates to life cycle/continuum concepts, is the continuing relevance of permanent value as a concept in the modern record environment. According to Acland:

> Should Archivists “select for permanent retention” as we have all be schooled or “appraise and eliminate” with a shift in axis to the determination of continuing, rather than permanent, value. To the corporate archivist frequently falls the responsibility for determining continuing value because of the direct and integrated relationship that exists with the creators and major users of the records and because they may subsequently be expected to conjure up information or evidence required by their organization on request, irrespective of physical custody or even time lapse.

She then goes on to say that "the strength of an integrated corporate archival appraisal program based on continuing value is that it combines systems analysis with cost-benefit efficiency." [42] Kowlowitz agrees. In reference to the United Nations Advisory Committee for Coordination of Information Systems (ACCIS) report, he observes that "appraisal must become a flexible and continuing activity suited to an ever changing automated environment ... [and] archivists should appraise electronic records in terms of their continuing value rather than their permanent value and that records be reappraised at the time the data is migrated to new media and software environment."[43]

This discussion raises several questions about (1) the timing of appraisal, (2) the procedures or methods of appraisal, and (3) its aim. From the discussion, we may suggest some refinements to the research questions?

- Does the life cycle of electronic records differ from that for traditional records?
- When and how should the various classes of electronic records be scheduled?
- Do schedules consider only primary value or both primary and secondary value?
- Is secondary value considered only at the time records become inactive?
- Should electronic records be re-appraised, if they are to be converted or migrated?

[42] Acland, 116.
[43] Kowlowitz, 37.

5.2 What is to be appraised?

Hofman argues that the only sound methodology for electronic records is functional appraisal. Discussing conclusions of the Dutch PIVOT project, he states:

> The nature and mass of electronic records make it necessary to approach them from a higher, more abstract level. In other words, it is not the records themselves that need our first attention, but the context in which they are created. In the Netherlands such a method is being developed by PIVOT (Project for Implementation Reduction Transfer-period). The basic principles of this are: identify the spheres of government activity, the organisations involved (the "actors") and their functions. Based on this overview the functions are appraised.[44]

This functional approach to appraisal attaches value to the various activities in which the creator engages, and allows appraisal to be conducted across the organizations' spectrum of activity and for large volumes of records, without necessarily engaging in a detailed examination of every records series or system.

The Australian Archives has adopted a similar approach. According to O'Shea, it has focused on developing appraisal methods based on the context of records creation rather than the records themselves. He outlines the three main reasons why functions need to be examined.

> Firstly, the Archives primary responsibility is to select and preserve archival records. Secondly, the resources devoted to the exercise must produce the most worthwhile outcome in terms of identifying the records with the highest values. Thirdly, it has been recognized, from experience, that a significant proportion of most records and data on systems will be of temporary value. Because of these three factors, agency functions and recordkeeping systems need to be examined at the broadest level. From that point the activities and processes employed to manage these functions are examined in more detail and the values of the records created as a result determined.[45]

O'Shea argues that the logical extension of this principle implies that the archivist determines which records need to be preserved before they are created. "In the electronic environment, because the content, context and structure are not self evident, experience has led to the conclusion that it is imperative to specify which records are to be captured. As a consequence, to enable the records to be physically selected, more specific details about what data might be needed to

[44] Hofman, 6.
[45] O'Shea, "The Medium is not the Message," 77.

make the record needs to be provided linked to good descriptions of the functions to which they relate." [46]

The National Archives of Canada also developed a functional approach to appraisal. In this approach, according to Terry Cook, the first, and most important, question in appraisal concentrates on identifying the functional responsibilities of the person creating the records. Who, he asks, "would have had cause to create a record, what type of record would it be, and with whom would that corporate person cooperate in either its creation or its later use."[47] This focus on the function behind the creation of the record leads to a top-down appraisal strategy. According to Bailey, careful functional analysis provides archivists "with an understanding of the numerous factors which will influence their examination of the physical records." [48] In the Australian, Canadian, and Dutch approaches, the emphasis on functional appraisal is meant to provide a practicable means to appraise the large volumes of twentieth century records in organizations like governments in which there many functional interrelations.

Cook has also argued that appraisal of electronic records should not be treated as a special project, but rather as part of a strategic acquisition policy that follows traditional rhythms of analysis of the mandate, functions, activities, and record-keeping procedures of all agencies of the organization. This approach, he says, "can only succeed, however, if the organizational and intellectual distinctions between textual (paper) and data (electronic) archivists are obliterated, as well as those between textual and electronic analysis…."[49]

The approach to developing an appraisal methodology by the National Archives and Records Administration of the United States (NARA) reflects the traditional practice of appraising the record rather than the function. In discussing the NAPA (National Academy of Public Administration) led task force for the appraisal of federal databases, Ken Thibodeau notes that one aspect of the project was to "identify databases with long-term research value."[50] The NAPA team used a number of experts to establish appraisal criteria based on informational value. It did not use the method of functional analysis. Linda Henry, an archivist at the Center for Electronic Records (NARA), considers the NARA approach sound. In fact, she warns that appraisal by function may be dangerous:

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[46] *Ibid*., 76.
[47] Terry Cook, "Mind Over Matter: Towards a New Theory of Archival Appraisal," in *The Archival Imagination: Essays in Honour of Hugh A. Taylor*, ed. Barbara L. Craig (Ottawa: Association of Canadian Archivists, 1992), 47.
[48] Catherine Bailey, 94.
[49] Terry Cook, "Appraisal in the Information Age: A Canadian Commentary," David Bearman, ed., "Archival Management of Electronic Records," *Archives and Museum Informatics Technical Report No. 13* (1991): 54.
[50] Ken Thibodeau, "Archival Strategies for the Treatment of Databases: their Implementation at NARA," p. 2.

> An appraisal archivist could easily find this approach troublesome or unworkable. For example, one important function of the U.S. Patent and Trademark Office (PTO) is granting patents. NARA appraised the important electronic patent records a few years ago. In 1996 PTO submitted schedules for 54 additional electronic systems. The appraisal archivist could have considered only function--an important one--and not have looked at the records, presumably appraising all 54 as permanent. Instead the archivist considered the content of all the databases and appraised only one as permanent.[51]

She further argues that archivists "can give advice about creating and managing reliable records"; however, "if archivists usurp the role of creator by defining what records should be created, archivists make records “less genuine, less authentic."[52] It is very likely, however, that part of the reason for this apparent divergence is that NARA was appraising databases, rather than the kind of record-keeping systems assumed by the other authors. This only points out the need to situate discussion in terms of classes of electronic records that can be assumed to have similar characteristics in different juridical contexts.

Luciana Duranti has also observed that problems develop when archivists attempt to build appraisal decisions into systems before records are created. In reference to the ACCIS report,[53] she argues that building systems that establish which records need to be captured implies that "such an appraisal decision is to be made item by item." The ACCIS report is not explicit about how this is to be done, or by what criteria. Rather it attempts to facilitate this approach by redefining the record as a business transaction. Duranti observes that the very act of distinguishing those records that are recorded transactions from those that are not is in and of itself an appraisal decision. As she puts it, "somehow the fact that a piece of information is identified as a ‘record transaction’ means that it must be retained, and indeed, throughout the report there is the sense that the decision that an entity constitutes a record is an appraisal decision." She notes that there are both difficulties and unresolved ambiguities with this concept when she asks: "On which basis can one segregate a record from a non-record? Unfortunately, as Duranti notes, little investigation had been conducted in this area despite its obvious significance.[54]

This discussion poses the following questions.

- Does functional appraisal provide a solution to the determination of value criteria? If so what is the precise methodology involved?

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[51] Linda J. Henry, "Schellenberg in Cyberspace," *The American Archivist* 61 (Fall 1998): 317.
[52] Henry, 319.
[53] United Nations, Advisory Committee on the Co-ordination of Information Systems (ACCIS), *Management of Electronic Records: Issues and Problems* (New York: United Nations, 1990.)
[54] Luciana Duranti, "The Thinking on Electronic Records," *Janus* (1997.2): 53.

- On what basis does the archivist decide that certain functions are worth documenting and others not?
- Is appraisal responsible for determining which "recorded transactions' are to be preserved?

5.3 Who Appraises?

Another important question raised by current reconsideration of appraisal theory is who does the appraisal at each stage. Henry observes that the records continuum approach tends to blur the distinction between archivists and records managers. Whereas "the traditional life cycle delineates clear responsibilities to creators and records managers for the primary value of records and to the archivists for the secondary value," in the continuum model "archivists hold responsibility beginning before creation, through maintenance, preservation, and use."[55] In a sense, then, the question becomes not who is in charge of appraisal but what an archivist is in the electronic world. As Edward Higgs says:

> The role of the archivist would, therefore, lie in ensuring that the suitable archival principles are embedded in computer systems at the design stage, ensuring intellectual control, and providing gateways to electronic information. In addition, archivists might cooperate with historians in designing search engines to locate and contextualize relevant records via networks. The archivist appraising, selecting, and listing documents, and placing them in published guides would be a thing of the past.[56]

This discussion suggests the following question.

- Does the role of the archivist/archival institution change in the appraisal of electronic records, and, if so how?

6.0 Technical Analysis

In his RAMP study, Naugler observes that "machine readable records cannot be appraised solely for their content. They must also be examined in terms of their technical requirements." At the time Naugler was writing, the main technical issues were:

1. Are the materials readable by a computer? This problem, of course, is related to the durability of the medium and to the problems created by the rapid rate of technological change, but, in fact, unreadable electronic records cannot be appraised.

[55] Henry, 318-319.
[56] Edward Higgs, "Historians, Archivists, and Electronic Record Keeping," in Edward Higgs, ed., *History and Electronic Artifacts* (Oxford: Clarendon Press, 1998), 145.

2. The adequacy of documentation is vital. This was a particularly serious problem in the first phase of computing, when a record of programming decisions was necessary to understand the data.
3. Each potential accession had to be assessed as to the internal structure of files and the degree of dependence on hardware and software, and then a determination made as to whether the data could be preserved in that format or needed to be transferred to a standardized format.
4. Each potential accession had to be evaluated considering the cost of preservation and the benefits of preserving the data for continuing research purposes.
5. Certain servicing implications had also to be taken into account because the complexity of the records (or data) and their format affect service to users and the cost of reproduction.
6. In some cases, privacy or confidentiality considerations may require providing a “public use” version of non-restricted data. The cost and viability of this had to be taken into account.

He then identifies a number of other issues:

1. the problem of confidentiality of personal information;
2. the implication of exchange of data across national borders;
3. the viability of sampling electronic records or data;
4. the question of whether initial appraisal decisions need to be reviewed in the light of the cost of continuing maintenance and use.

In the second period of computing, the kind of technical analysis Naugler outlines gave way to systems overview in a first phase of analysis. O’Shea characterizes it as a gathering of information on:

- the title of the system or application
- purpose of it
- an overview of the subject content of the data
- an overview of the major stages of data flows
- the number of logical records or units of measurement associated with the application
- background on its development
- cross-references to documentation elsewhere
- data collection procedures

In a second phase, the following are assessed:

- ability to manipulate the data/records (usually now referred to as functionality)
- level of aggregation of the data in the system
- whether the records themselves can be accessed
- internal arrangement of the data in the system
- frequency at which the data is replaced

- software and hardware of the system/application
- physical condition of the medium
- usability if the data in its current state
- quantity of material versus its long term costs of maintenance

The more recent literature avoids discussion of the details of technical analysis. Given that many of the writers on this aspect derived their criteria for technical analysis from Naugler, the questions are:

- Which technical aspects of electronic records need to be taken into account during appraisal?
- How do these aspects vary depending on the type of electronic record?

7.0 Content Analysis

Naugler uses the traditional notions of legal, evidential, and informational value. The main question as to legal value at the time of his writing was whether electronic records could be admitted to court proceedings. He passes over evidential value without much comment, and concludes that “the main appraisal judgement” concerns informational value, in which the main considerations are: and says that “several general points should be considered:

- the uniqueness of the information
- the importance of the information
- the degree to which researchers can manipulate the information
- the level of aggregation
- the potential for linkage with other data through common identifiers

He then distinguishes the types of data found in computer systems according to purpose/function as:

1. administrative or housekeeping data;
2. personnel data;
3. supply data;
4. financial data;
5. project management data;
6. operational data;
7. measurement (or instrumentation data);
8. license data;
9. survey data;
10. registry data;
11. automated office information (correspondence, reports, memoranda, and other documents stored in electronic form)

He discusses the factors to be taken into account in each case, in order of importance. For instance, for registry data, the factors in order of importance are: " [the character of] the activity registered; the individuals or events being registered; the number of variables of information provided."

These kinds of criteria recommended themselves when it was mostly a matter of evaluating the continuing research utility of data. More recent literature is relatively silent on content analysis. Much of the discussion has given way to consideration of the value of the functional approach, as reviewed earlier in this paper. As archivists recognize that they are in fact dealing with records in electronic form, there seems to be no need to discuss special problems of content analysis such as were considered earlier on.

However, it is evident from Naugler's discussion of appraisal of the various classes of data that it will be necessary to discuss appraisal of the various classes of electronic record that exist today, for each of them will present special issues. The work in this Domain will therefore be instrumentally assisted by the work on an electronic records typology. Therefore the question is:

- Is there any difference in assessing the content of electronic records as compared to traditional records?

8.0 Conclusion

Although the literature on the appraisal of electronic raises many important issues, many of them are issues relevant to appraisal of records in any medium and form. Many others relate to the overall strategy and tactics of appraising electronic records in a difficult environment. It is evident that the work of the Appraisal Task Force is primarily to identify the particular issues that apply to long-term preservation of authentic electronic records. To do this, the Task Force needs to do two things. First, it needs to model the process of appraisal to identify the various activities involved in selection and acquisition. Then, it needs to use the results of the work of the Authenticity Task Force in developing a Template for Analysis, case studies, and a typology of to identify the specific issues relevant to appraisal of electronic records.

InterPARES Project

International Research on Permanent Authentic Records in Electronic Systems

APPRAISAL TASK FORCE

Model Diagrams

June 2001

version 4.0

MODEL INFORMATION	
TITLE	*Select Electronic Records*
AUTHOR	Appraisal Task Force, InterPARES Project
MODEL TYPE	IDEF(0) function model. IDEF(0) (Integration Definition for Function Modelling) is a U.S. Federal Information Processing Standard (Publication 183, as issued by the National Institute of Standards and Technology). "A function model is a structured representation of the functions, activities or processes within the modelled system or subject area." See <www.idef.com> for more information.
VERSION	3.0
VERSION DATE	June 19, 2001
PREVIOUS VERSION	3.0
PREVIOUS VERSION DATE	May 2, 2001
PURPOSE	The purpose of this model is to define the activities involved in selection of authentic electronic records for long-term preservation.
VIEWPOINT	The entity (archival institution or program) responsible for long-term preservation of electronic records of an organization (government, corporate body, or institution).
SCOPE	Covers all the activities conducted by the preserver in appraising and carrying out disposition of electronic records.
SOURCE	Appraisal Task Force modelling workshops • May 4&5, 2000 (Appraisal Task Force meeting, University of British Columbia) • June 25, 2000 (InterPARES International Team Workshop #5, Washington D.C.) • January 19-20, 2001 (ApTF Meeting, University of Toronto) • February 12 – 16 (InterPARES International Team Workshop #7, Vancouver, BC) • April 29-May 2, 2001 (Task Force Meeting in Ottawa) • June 18-22, 2001 (International Team Workshop #8, Washington, D.C.)

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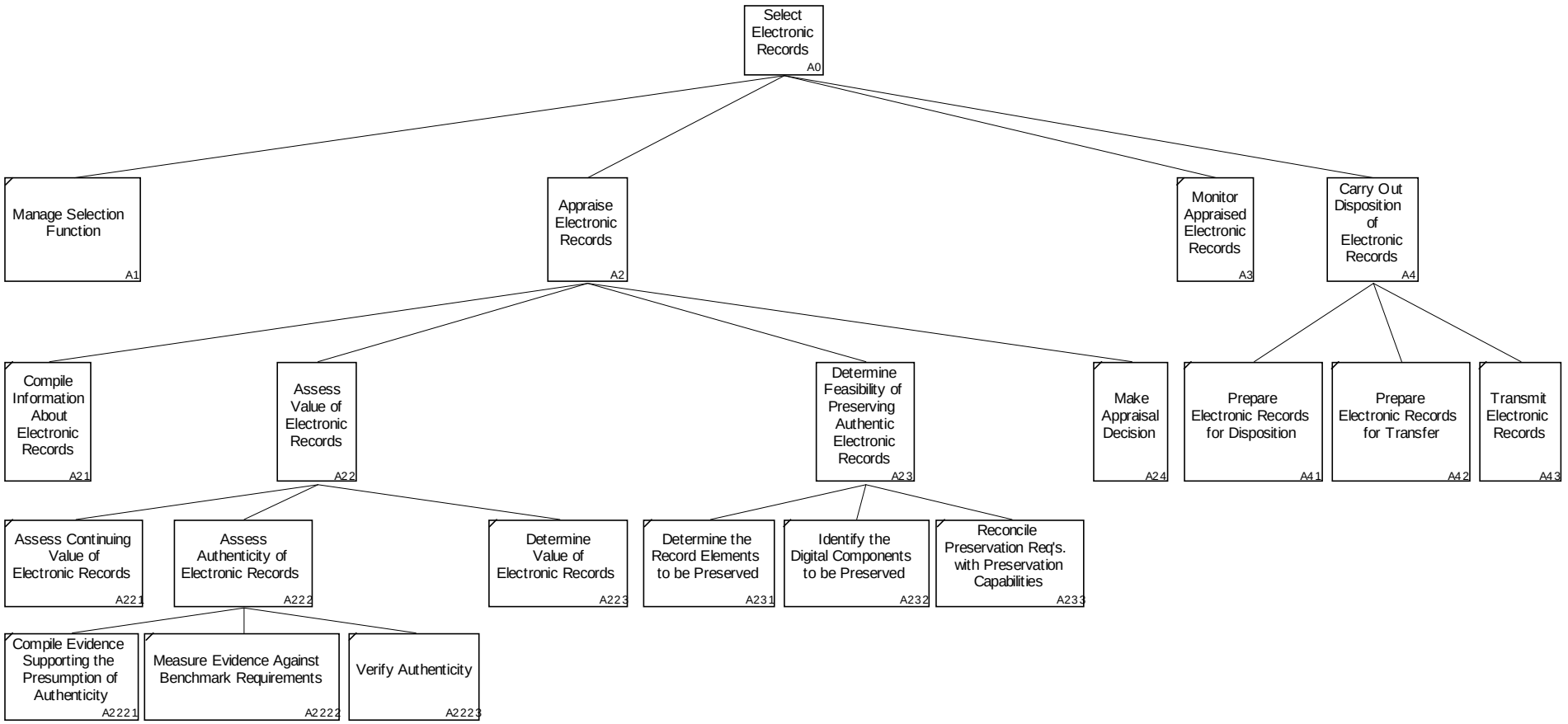

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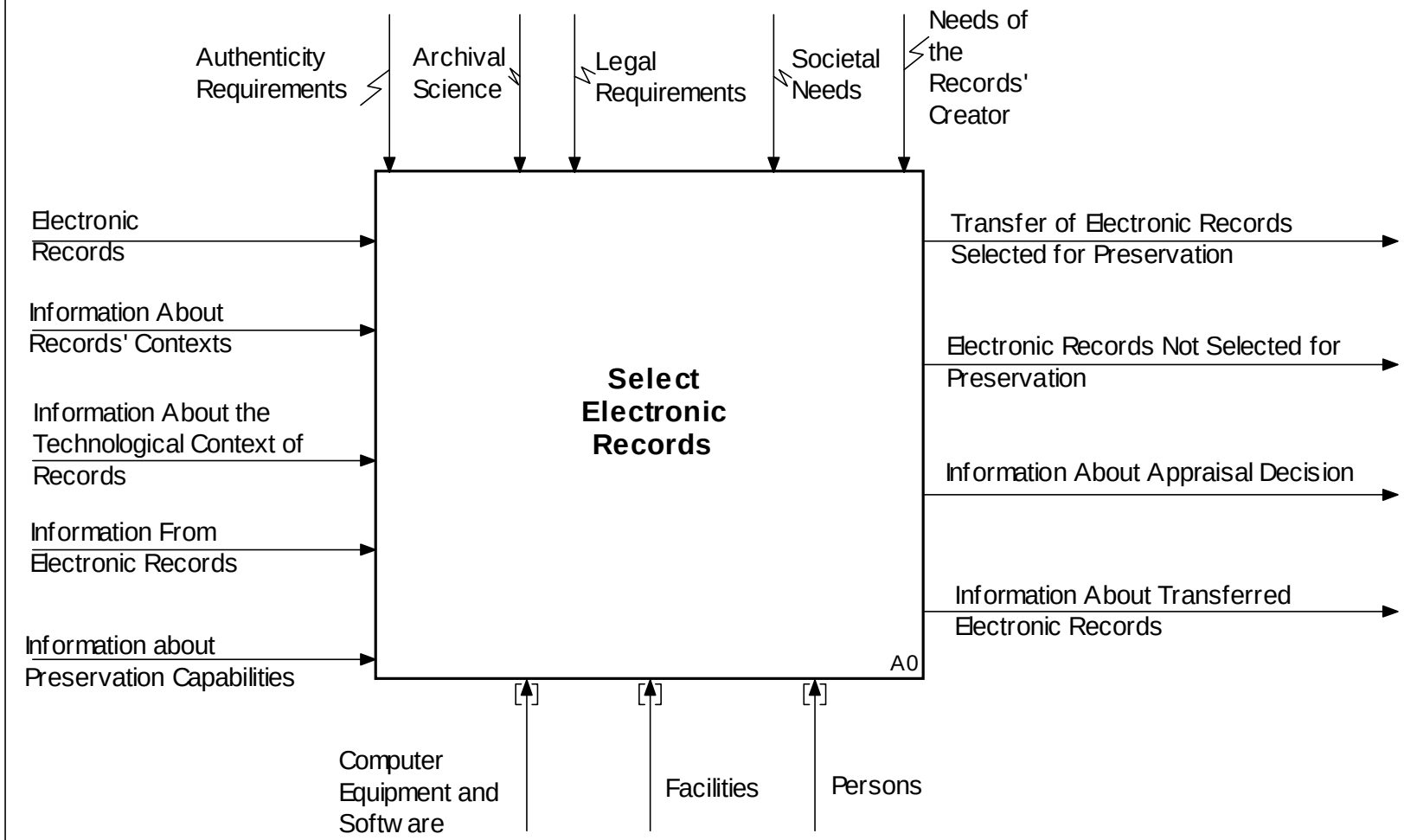

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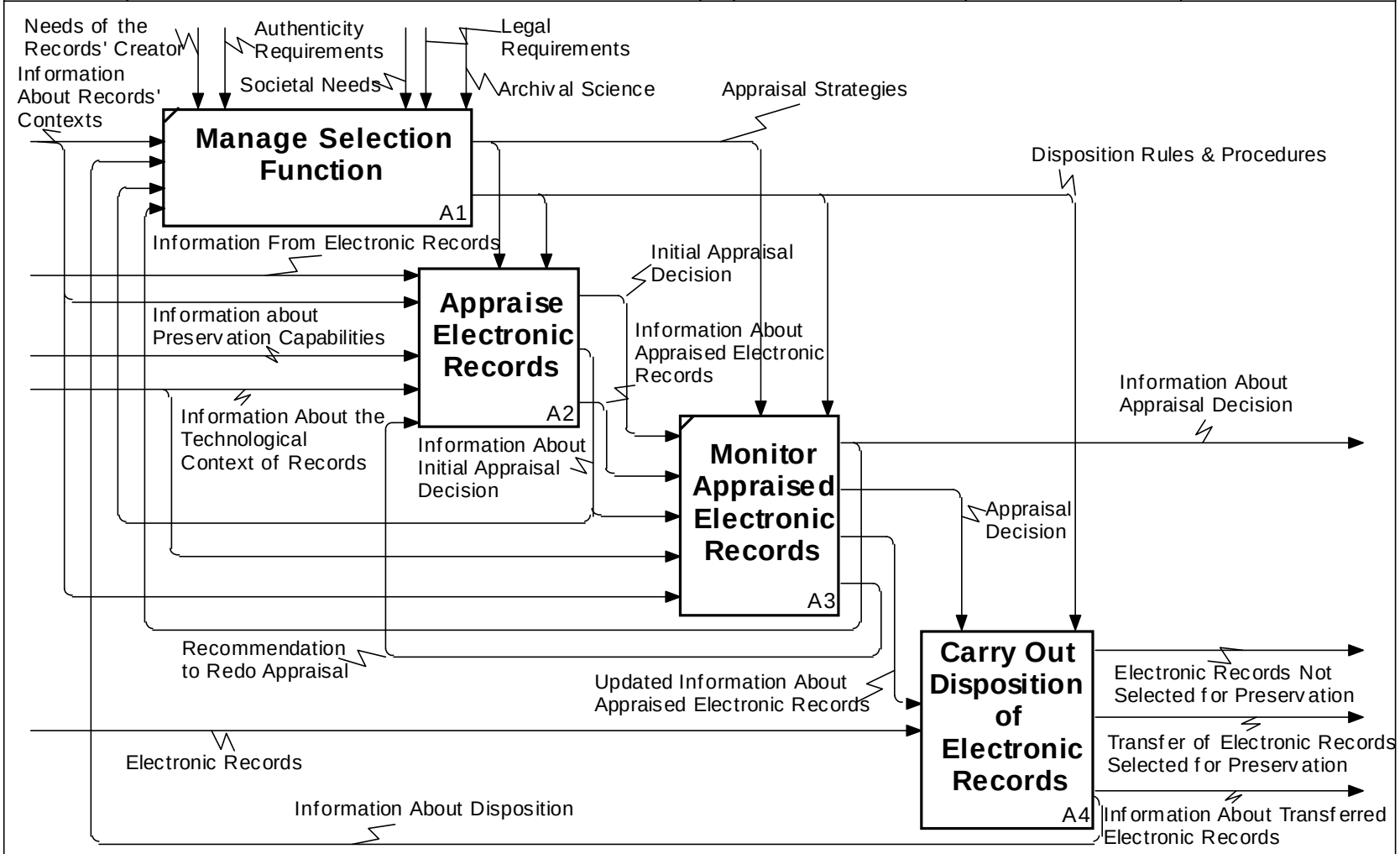

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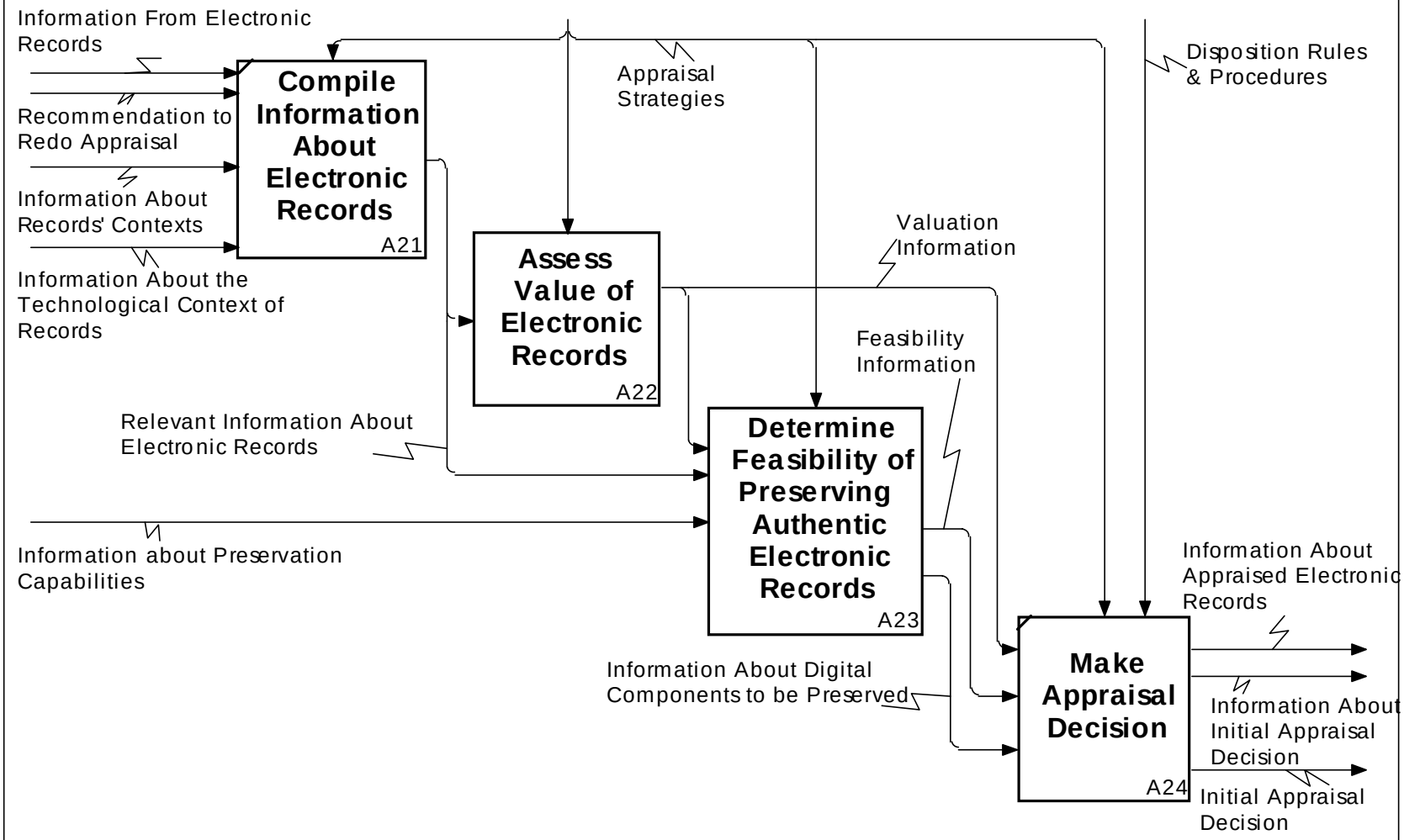

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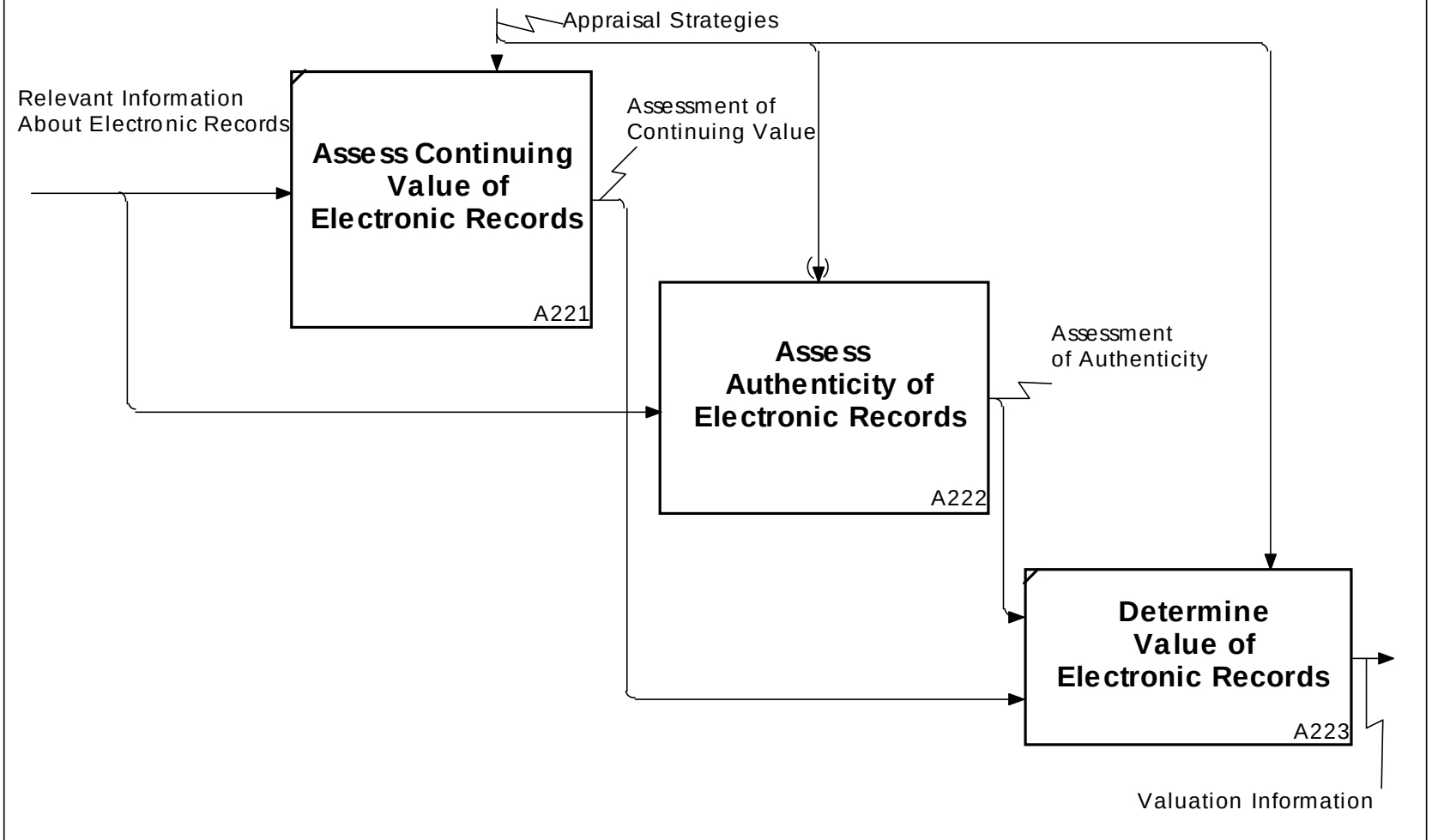

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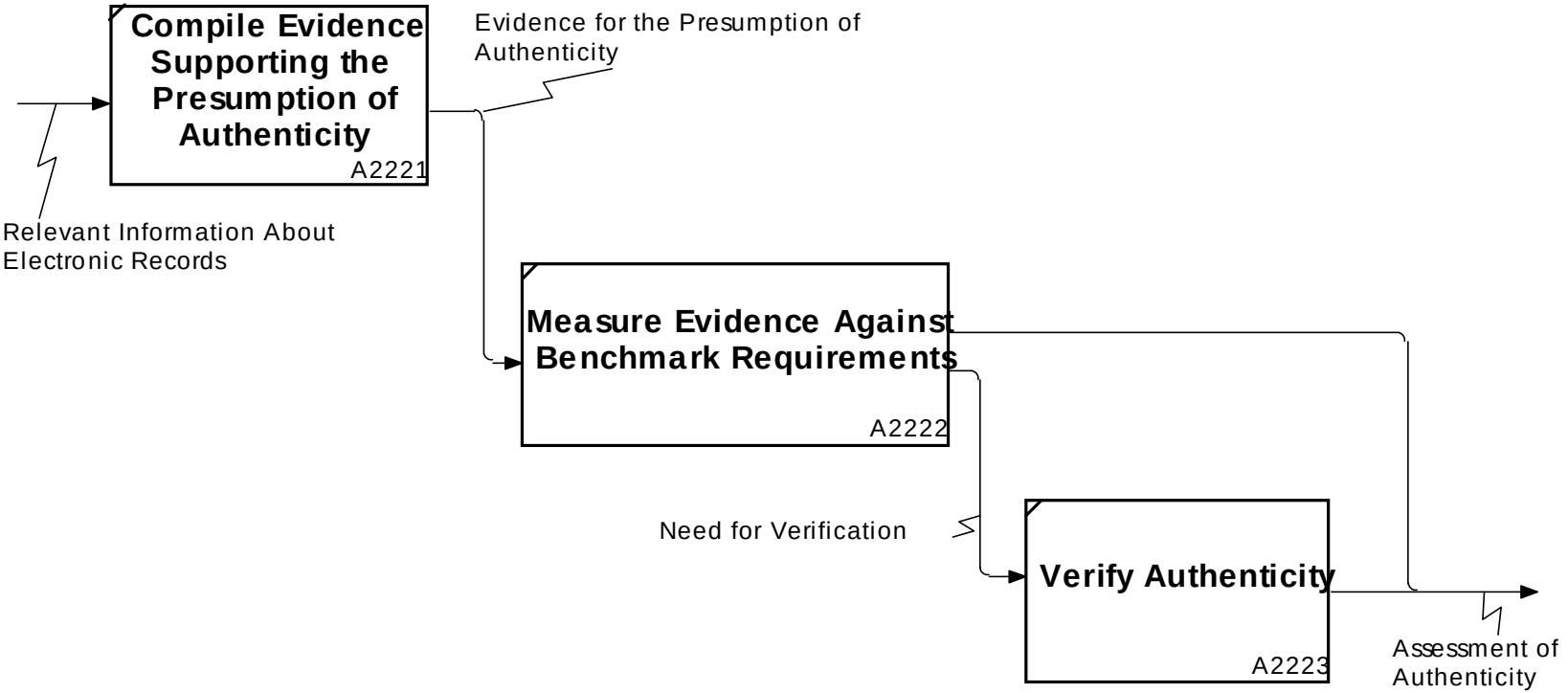

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A222	Assess Authenticity of Electronic Records	v.4.0

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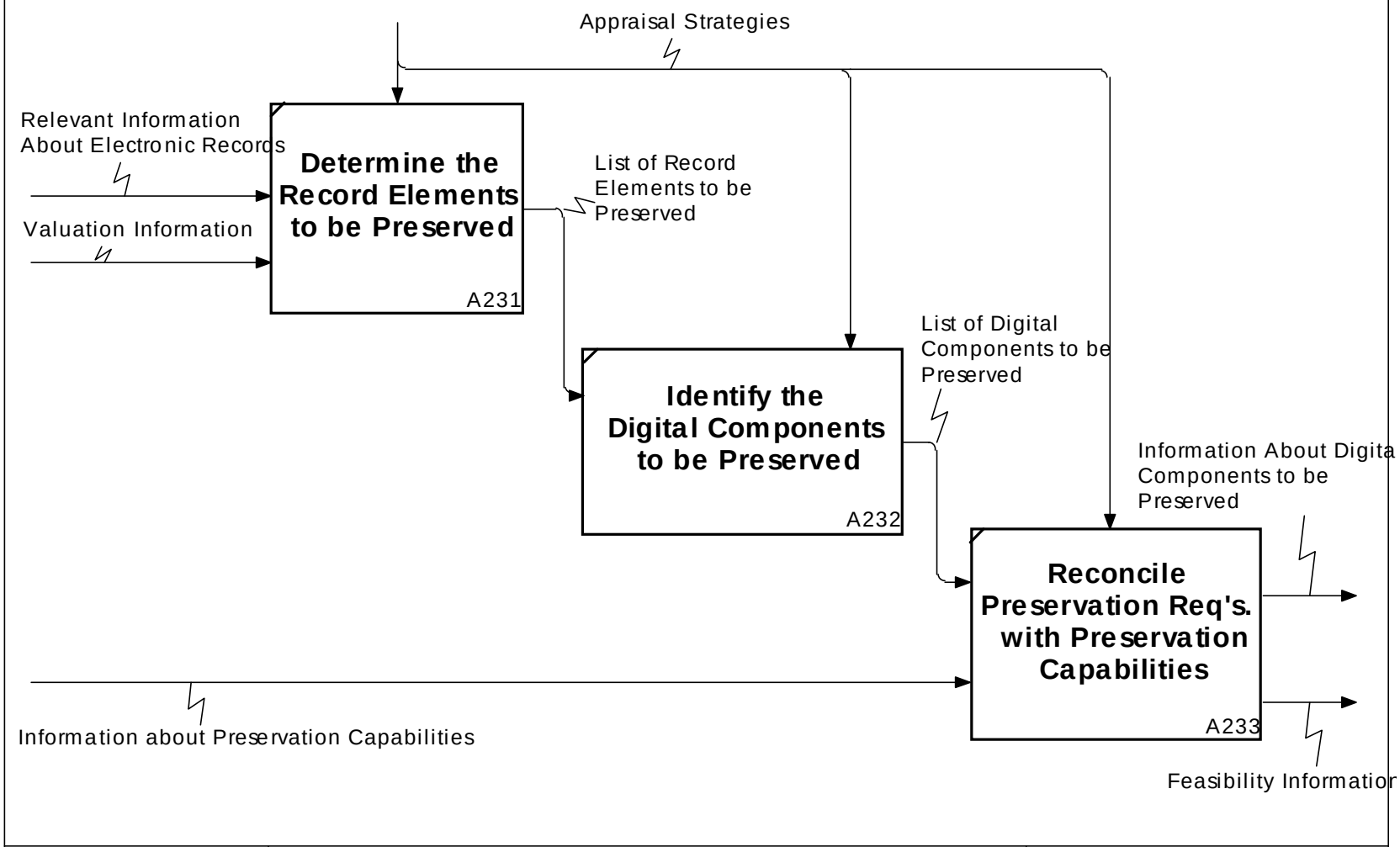

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A23	Determine Feasibility of Preserving Authentic Electronic Records	v.4.0

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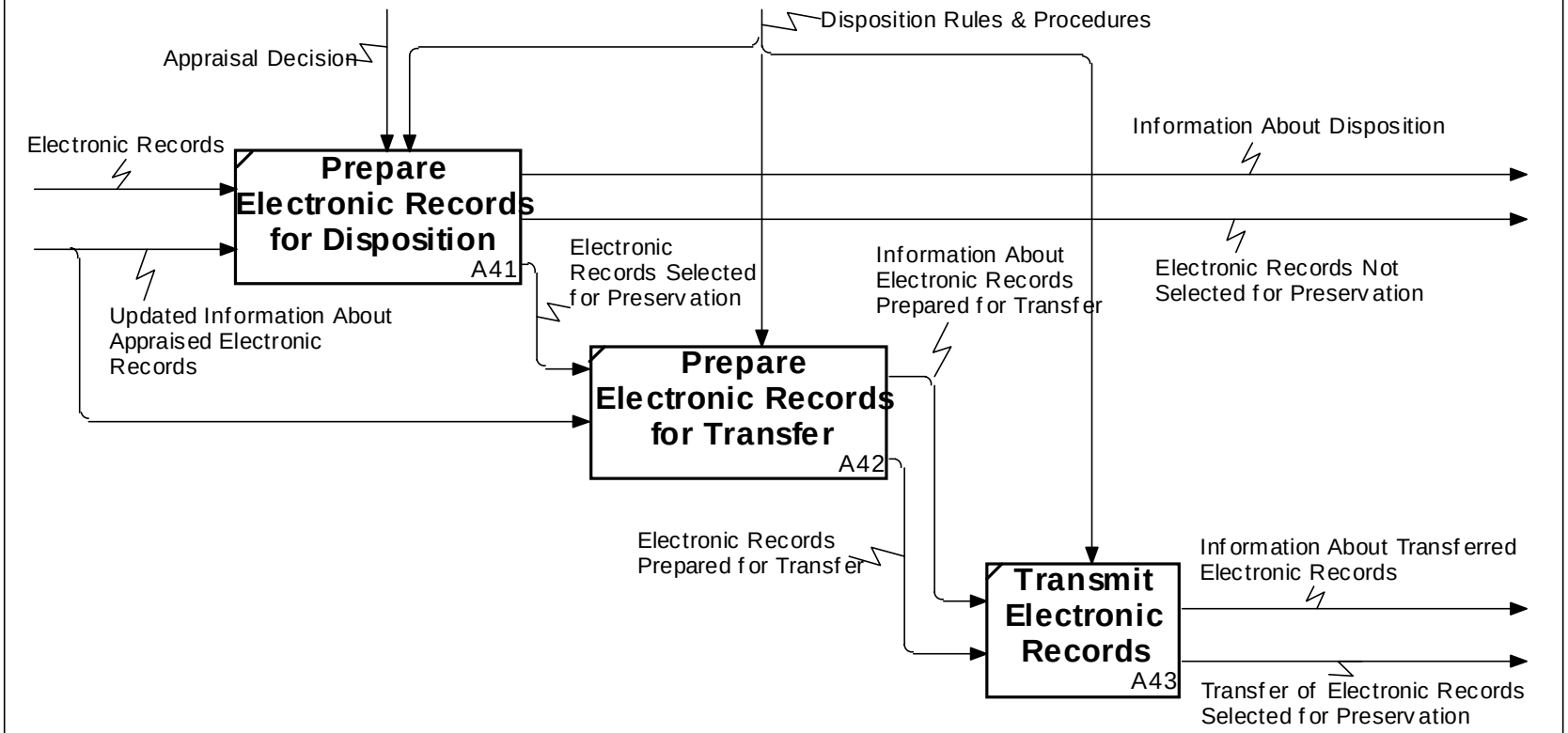

NODE:	TITLE:	NUMBER:
A4	Carry Out Disposition of Electronic Records	v.4.0

InterPARES Project

International Research on Permanent Authentic Records in Electronic Systems

APPRAISAL TASK FORCE

Activity Definitions

June 2001

version 4.0

Activity Name	Activity Number	Activity Definition	Activity Note
Select Electronic Records	A0	To appraise and carry out disposition of electronic records according to the continuing needs of the creator and society, using the principles of archival science.	
Manage Selection Function	A1	To establish, implement, and maintain a framework for the selection function.	
Appraise Electronic Records	A2	To evaluate electronic records for the purposes of continuing preservation.	
Compile Information About Electronic Records	A21	To collect, organize, and record relevant information from the electronic records and about their juridical-administrative, provenancial, procedural, documentary, and technological contexts.	
Assess Value of Electronic Records	A22	To analyse and judge (1) the capacity of electronic records to serve the continuing interests of their creator and society and (2) the grounds for presuming the records to be authentic.	
Assess Continuing Value of Electronic Records	A221	To analyse and judge the capacity of electronic records to serve the continuing interests of their creator and society.	
Assess Authenticity of Electronic Records	A222	To analyse and judge the grounds for presuming electronic records to be authentic.	
Compile Evidence Supporting the Presumption of Authenticity	A2221	To collect, organize, and record evidence of the identity and integrity of electronic records and about the procedural controls applied to them, to support the presumption of authenticity of electronic records.	This is the compiling of information according the benchmark requirements. Definition should mention identity, integrity and procedural control.
Measure Evidence Against Benchmark Requirements	A2222	To compare the evidence compiled about the identity, integrity, and procedural controls of the records with the benchmark requirements for authenticity.	Benchmark Requirements 1- 8 Definition should mention identity, integrity and procedural control.
Verify Authenticity	A2223	To establish grounds for presuming the authenticity of electronic records, in cases where there is insufficient evidence to meet the benchmark requirements, by methods of verification such as comparing the records with copies or backup tapes, performing textual analysis, or examining audit trails.	See footnote 8 of Draft Requirements for Ensuring the Authenticity of Electronic Records Over Time. (April 2001)
Determine Value of Electronic Records	A223	To establish the value of electronic records based on an assessement of their continuing value and their authenticity.	
Determine Feasibility of Preserving Authentic	A23	To decide whether the record elements conferring authenticity and embodying value can be preserved given the preserver's current	

Activity Name	Activity Number	Activity Definition	Activity Note
Electronic Records		and anticipated preservation capabilities.	
Determine the Record Elements to be Preserved	A231	To identify the extrinsic and intrinsic elements of form and the content of electronic records that need to be preserved.	
Identify the Digital Components to be Preserved	A232	Identify the digital components that manifest the record elements that need to be preserved.	
Reconcile Preservation Req's. with Preservation Capabilities	A233	To decide whether the digital components manifesting the record elements that need to be preserved can in fact be preserved given the preserver's current and anticipated preservation capabilities.	
Make Appraisal Decision	A24	To decide the disposition of electronic records and agree on the terms and conditions of implementation.	
Monitor Appraised Electronic Records	A3	To keep track of changes to appraised electronic records or their context that make it necessary to adjust or redo an appraisal, initiate a transfer, or take some other action.	
Carry Out Disposition of Electronic Records	A4	To effect destruction and/or transfer of custody of electronic records according to the appraisal decision.	
Prepare Electronic Records for Disposition	A41	To format and copy records selected for preservation so as to prepare them physically for transfer, or prepare records not selected for preservation for destruction, alienation to another entity, or such other disposition as has been determined in the appraisal decision.	Prepare electronic records for destruction and/or transfer of custody. The latter could include copying, extracting, reformatting, etc...
Prepare Electronic Records for Transfer	A42	To package records selected for preservation with the necessary information for their continuing preservation, including the terms and conditions of transfer, identification of digital components to be preserved, and associated archival and technical documentation.	
Transmit Electronic Records	A43	To send electronic records prepared for transfer, with the accompanying information necessary for continuing preservation, to the office responsible for the preservation function.	Sending transfer packaged with information to those responsible for the contiinuing preservation.

InterPARES Project

International Research on Permanent Authentic Records in Electronic Systems

APPRAISAL TASK FORCE

Arrow Definitions

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Arrow Name	Arrow Definition	Arrow Note
Appraisal Decision	A determination of the disposition of electronic records, including the terms and conditions of transfer, that has been reviewed and revised as necessary in the light of changes in the records and their context.	
Appraisal Strategies	The rules and conventions of the entity responsible for continuing preservation that govern the appraisal of electronic records.	
Archival Science	The concepts, principles, and methodologies governing the treatment of records, including the concepts, principles, and methodologies defined by diplomatics.	
Assessment of Authenticity	A record stating the reasons for presuming electronic records to be authentic in terms of the benchmark requirements for authenticity.	
Assessment of Continuing Value	A record stating the reasons for continuing preservation of electronic records	
Authenticity Requirements	The specification of the elements of form and context that need to be preserved in order to maintain the authenticity of a given type of electronic record.	
Computer Equipment and Software	Hardware and software to access electronic records.	
Disposition Rules & Procedures	The rules and procedures governing the process of the disposition of electronic records.	
Electronic Records	A record that is created (made or received and set aside) in electronic form	
Electronic Records Not Selected for Preservation	Electronic records identified for destruction or disposition to an entity other than the one responsible for continuing preservation.	
Electronic Records Prepared for Transfer	Electronic records formatted and copied for transfer and associated with the information necessary for transmittal and continuing preservation.	
Electronic Records Selected for Preservation	Electronic records identified for transfer to the entity responsible for continuing preservation.	
Evidence for the Presumption of Authenticity	Information drawn from electronic records, from metadata related to the record, and/or from their various contexts that provides evidence to support a presumption of the records' authenticity.	
Facilities	Material resources need to undertake the selection of electronic records.	
Feasibility Information	Information about the cost and technical capability required for continuing preservation of a given body of electronic records.	
Information About Appraisal Decision	A record explaining the valuation of electronic records and the feasibilty of their continued preservation, and justifying the decision.	
Information About Appraised Electronic Records	A record compiled during the appraisal process containing information about the context and content of appraised electronic records.	
Information About Digital Components to be Preserved	Information about the way in which the record elements to be preserved are manifested in the electronic environment, construed for the purposes of instructing preservation activities.	
Information About Disposition	Information about the quantity and characteristics of records selected for	

Arrow Name	Arrow Definition	Arrow Note
	preservation and records not selected for preservation, and about the process and the cost of disposition of electronic records, utilized for management purposes.	
Information About Electronic Records Prepared for Transfer	Information that spells out the terms and conditions of transfer of electronic records, and that identifies the digital components to be preserved together with the archival and technical specifications necessary to guide continuing preservation.	
Information About Initial Appraisal Decision	A record explaining the initial valuation of electronic records and the feasibilty of their continued preservation, and justifying the decision.	
Information about Preservation Capabilities	Information about the preserver's current and anticipated capacity to preserve electronic records, including the state of preservation knowledge, hardware/software capabilities, staff expertise, and financial resources.	
Information About Records' Contexts	Information about the juridical-administrative, provenancial, procedural and documentary contexts of the records.	
Information About the Technological Context of Records	Information about the hardware and software environment(s) in which electronic records were created and kept.	
Information About Transferred Electronic Records	A record providing the necessary information about electronic records to maintain them continuously in authentic form, including the terms and conditions of transfer.	
Information From Electronic Records	Information drawn from reading the form and content of electronic records.	
Initial Appraisal Decision	An initial determination of the disposition of electronic records, including the terfms and conditions of transfer.	
Legal Requirements	The concepts, principles, and specific statements in law relevant to the selection of records.	
List of Digital Components to be Preserved	List of the components in the electronic environment that manifest the record elements that need to be preserved to maintain authenticity.	
List of Record Elements to be Preserved	A list of the extrinsic and intrinsic elements of form that need to be preserved to maintain the authenticity of electronic records.	
Need for Verification	The need to employ methods of verification of authenticity as a result of there being weak evidence for the presumption of authenticity.	
Needs of the Records' Creator	The perceived interests of the creator served by continuing preservation of records.	
Persons	People who perform the selection function	
Recommendation to Redo Appraisal	Instructions to revise an appraisal decision as a result of substantial changes in the records and their context.	
Relevant Information About Electronic Records	Information that is needed to appraise electronic records	
Societal Needs	The perceived interests other than those of the creator served by continuing preservation of records.	
Transfer of Electronic Records	Electronic records copied and formatted for transfer and sent to the office	

Arrow Name	Arrow Definition	Arrow Note
Selected for Preservation	responsible for the preservation function.	
Updated Information About Appraised Electronic Records	A record compiled during the monitoring process containing updated information about he context and content of appraised electronic records.	
Valuation Information	Information about the criteria used to assess the value of electronic records and their application in a given case.	