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# The Management of Textual Digital Archives: a Canadian Perspective Library and Archives Canada and Federal Government Institutions\*

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*From registration and identification to care and retrieval, the management of active digital records represents a challenge to any organization. Moreover, access rights and records' dissemination mean that information is shared both within and outside the organization. To this end, metadata schema have been established, standardized and distributed amongst information specialists, records managers, and archivists. The Government of Canada Records Management Application Profile and the Government of Canada Records Management Metadata Standard provide a metadata schema to ensure that authenticity, reliability, integrity, and usability of records in electronic format.*

*However, the permanent or long-term conservation of records in many media and formats is a challenge facing Library and Archives Canada (LAC) in the near future. While the Trusted Digital Repository (TDR) could represent a solution to this problem, LAC must address issues associated with transferring this information from the Records Do-*

*The management of digital records: a paradigm shift a technological challenge, an organizational culture problem, a pain in the neck for records managers and archivists, or a plea to ensure that records managers and archivists take responsibility even before the creation of records?*

## 1. Introduction

The management of textual electronic records (e-records) represents an important challenge for records managers and archivists, not only from a technical or technological stand point, but even more from cultural and professional perspectives as these two professional groups must begin managing e-records even before their creation. If archivists want to play a major role in the management of e-records, they can no longer wait until the moment of transfer to permanent holdings to get involved. Archivists must participate in establishing the functional requirements of Electronic Documents/Records Management System (EDRMS) and in defining the mandatory metadata that will be required at record creation. It will become particularly important that appropriate methodologies, guidelines and procedures are put in place and that document management tools such as retention schedules and classification plans are kept up to date to ensure that records are properly managed from creation point to disposition or permanent preservation. In other words, the professional worlds of records managers and archivists must be combined to create a thorough, seamless records continuum. In addition, managing electronic records implies a broad cultural transformation from records creator to end user. Through policies, methods, guidelines, directives and procedures, records managers and archivists must to sensitize the desktop user, making clear that the information (records) they deal with is not their own or private but CORPORATE and their responsibility as employees of the corporation.

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## 2. Characteristics of All Records

Before going any further, it is important to mention the four characteristics of any record, regardless of format. We are all familiar with the characteristics of properly managed traditional (paper) records and are aware that these same attributes apply to e-records. Consequently, policies, methodologies, and procedures must be established and implemented within any organization for every stage of the e-record life cycle. The protection of a record is not a purely technological issue, even though technical elements may be components of this preservation process.

According to ISO 15489 – *Information and documentation – Records management*, the four characteristics of records are:

**AUTHENTICITY.** An authentic record is one that can be proven to be what it purports to be, to have been created or sent by the person purported to have created or sent it, and to have been created or sent at the time purported.

To ensure the authenticity of records, organizations should implement and document the policies and procedures which control the creation, receipt, transmission, maintenance and disposition of records to ensure that records creators are authorized and identified and that records are protected against unauthorized addition, deletion, alteration, use and concealment.

**RELIABILITY.** A reliable record is one whose contents can be trusted as to be a full and accurate representation of a transaction, activity or fact to which it attests and can be depended upon in the course of subsequent transactions or activities. Records should be created at the time of the transaction or incident to which they relate, or soon afterwards, by individuals who have direct knowledge of the facts or by instruments routinely used within the business or to conduct the transaction.

**INTEGRITY.** The integrity of a record refers to its being complete and unaltered. It is a necessity that a record be protected against an unauthorized alteration. Records management policies and procedures should specify what additions or annotations may be made to a record after it is created, under what circumstances additions or annotations may be authorized, and who is authorized to make them. Any authorized change to a record should be explicitly indicated and traceable.

**USABILITY.** A useable record is one that can be located, retrieved, presented and interpreted. It should be capable of subsequent presentation as directly connected to the business activity or transaction that produced it. The contextual linkages of records should carry the information needed for an understanding of the transactions that created and used them. It should be possible to identify a record within the context of broader business activities and functions. The links between records that document a sequence of activities should be maintained.

A record system should be responsive to changing business needs but any changes in the system should not have an impact on

*cuments Information Managing Systems (RDIMS) used by government departments and agencies. This TDR design and implementation will combine technological components with administrative processes and procedures to ensure the effective transfer of electronic records from multiple departments and agencies. In this context, standardization, interoperability and workflow are fundamental. To ensure the authenticity, reliability, integrity, and usability of records for the coming centuries, the demands of long-term conservation can no longer be ignored.*

**NAHUET, Robert, *Trattamento degli archivi digitali testuali: una prospettiva delle biblioteche ed archivi del Canada e del governo federale canadese. Atlanti*, Vol. 17, N. 1-2, Trieste 2007, pp. 29-45.**

*Dalla protocollazione ed identificazione alla cura ed alla ricerca, la gestione dei documenti informatici rappresenta una sfida per ogni organizzazione. Inoltre, il diritto all'accessibilità ai dati e la diffusione dei dati significano che l'informazione è condivisa sia dentro che fuori l'organizzazione. A questo punto, schemi di metadati sono stati istituiti, standardizzati e distribuiti tra gli specialisti dell'informazione, i gestori del flusso archivistico, gli archivisti. Il Profilo Applicativo per la Gestione Documentale del Governo del Canada e gli Standard di Metadati di Gestione Documentale del Governo del Canada forniscono uno schema per i metadati che assicura autenticità, attendibilità, integrità ed usabilità dei documenti in formato elettronico. Comunque, la conservazione permanente o a lungo termine dei documenti su svariati supporti e formati è una sfida che si pone di fronte al LAC (Biblioteche ed Archivi del Canada) nel prossimo futuro. Mentre il TDR (Deposito Certificato Digitale) potrebbe rappresentare una soluzione a tale problema, il LAC deve rivolgersi alle problematiche connesse col trasferimento di tali informazioni dal RDIMS (Sistema di Gestione di Dati, Documenti, Informazioni) usato da dipartimenti ed agenzie statali. Questa progettazione ed attuazione del TDR combinerà componenti tecnologici con processi e procedure amministrative per assicurare l'ef-*

*fettino trasferimento dei documenti elettronici da molteplici dipartimenti ed agenzie. In questo contesto, la standardizzazione, l'interoperabilità ed il flusso sono fondamentali. Per assicurare l'autenticità, l'attendibilità, l'integrità e l'usabilità dei documenti per i secoli a venire, la richiesta di conservazione a lungo termine non può venir ignorata più a lungo.*

**NAHUET, Robert, Upravljanje z digitalnimi dokumenti: od zabeležbe do dolgo dobnе hrambe. Atlanti, Zv. 17, Št. 1-2, Trst 2007, str. 29-45.**

*Za vsako upravo arhivske ustanove predstavlja prepoznavanje in popisovanje digitalnih dokumentov poseben izziv. Ta izziv se povečuje, če mislimo še na pravice uporabnikov do informacij. Za boljše urejanje in pomoč arhivskim upravam pri tem skrbijo tudi predpisi oz. standardi, s pomočjo katerih se razrešujejo tudi vprašanja mega podatkov. Zavedamo se, da je vprašanje dolgodobnega branjenja dokumentacije na novih medijih zapleteno vprašanje ne le za arhive, ampak npr. tudi za knjižnice. Pri tem igrajo pomembno vlogo standardizacija, notranja izvedba in strokovnost delavcev. Da bi zagotovili autentičnost, zanesljivost, integritetnost in uporabnost dokumentacije, zahteve za dolgodobno hrambo ne bodo več mogle biti dolgo zanemarjene.*

the characteristics of the records in the system. Similarly, when records are transferred from one records system to another, the transfer should be carried out in a way that does not adversely affect the characteristics of the records.

### 3. Digital Records: Functional Requirements and Fundamental Characteristics

Additionally, electronic records which are part of an organizational process of records management must adhere to the intrinsic requirements of that process in order to be recognized as authentic records providing evidence of the functions and activities of their creator. In concrete terms, this means that the statement of authentic documentary evidence must include information identifying the record creator and any person who makes changes to it; sufficient evidence to ensure its non-repudiation, identify creation dates and dates of any changes and to establish the record authenticity (non-alteration). The requirement to retain as permanent implies that record must be easily copied from one medium to another, remain accessible and useable, remain identical to the original and be comprehensive, retaining the context of its creation. Permanent records must be capable of being reactivated for use in other transactions, if needed, and may only be deleted/destroyed in compliance with laws, regulations and recordkeeping best practices.

#### Functional Requirements for Evidence in Recordkeeping

We have examined the essential characteristics of records and seen that they are valid for all formats. It goes without saying that records are created within the framework of internal organizational systems which attempt to ensure a coherent management of its recorded information. Since one of the important attributes of an archive is its quality of authentic witness to the activities and functions of the organization, it follows that the implementation of requirements to safeguard this property of witness is of the utmost importance. The following is a statement from the University of Pittsburgh project of the requirements needed to ensure the preservation of evidence in electronic form<sup>1</sup> and not the application requirements for archival or records management systems.

The Pittsburgh findings of thirteen functional requirements may be gathered under five directing principles, as follows:

- A - Conscientious Organization
- B - Accountable Recordkeeping System
- C - Captured Records
- D - Maintained Records
- E - Usable Records

#### A- CONSCIENTIOUS ORGANIZATION Requirements:

1. The University of Pittsburgh School of Information Sciences has conducted a research project devoted to the examination of different elements that affect the integration of recordkeeping requirements in electronic information systems. These recordkeeping functional requirements had to take into account various legal, administrative, and other needs of a particular organization - which can be used in the design and implementation of electronic information systems. See: <http://web.archive.org/web/20000818163633/www.sis.pitt.edu/~nhprc/>. Last consulted on July 6, 2007.

1-. *Compliant*: Organizations must comply with the legal and administrative requirements for recordkeeping within the jurisdictions in which they operate, and they must demonstrate awareness of best practices for the industry or business sector to which they belong and the business functions in which they are engaged.

1a. External recordkeeping requirements are known

1b. Records created by organizational business transactions which are governed by external recordkeeping requirements are linked to an internal retention rule referencing the documented law, regulation, or statement of best practice.

## **B- ACCOUNTABLE RECORDKEEPING SYSTEMS**

### **Requirements:**

2. *Responsible*: Recordkeeping systems must have accurately documented policies, assigned responsibilities, and formal methodologies for their management.

3. *Implemented*: Recordkeeping systems must be employed at all times in the normal course of business.

4. *Consistent*: Recordkeeping systems must process information in a fashion that assures that the records they create are credible.

## **C- CAPTURED RECORDS**

### **Requirements:**

5. *Comprehensive*: Records must be created for all business transactions.

6. *Identifiable*: Records must be bounded by linkage to a transaction which used all the data in the record and only that data.

7. *Complete*: Records must contain the content, structure, and context generated by the transaction they document.

8. *Authorized*: An authorized records creator must have originated all records.

## **D - MAINTAINED RECORDS**

### **Requirements:**

9. *Preserved*: Records must continue to reflect content, structure, and context within any systems by which the records are retained over time.

10. *Removable*: Records content and structure supporting the meaning of content must be deletable.

## **E - USABLE RECORDS**

### **Requirements:**

11. *Exportable*: It must be possible to transmit records to other

systems without loss of information.

12. *Accessible*: It must be possible to output record content, structure, and context.

13. *Redactable*: Records must be masked when it is necessary to deliver censored copies and the version as released must be documented in a linked transaction.

It is clear from the preceding list, that the implementation of e-record management systems does not depend solely or purely on technical or technological elements, but much more on internal standards, policies and procedures which permit a healthy management of the documentary assets of an organization.<sup>2</sup>

#### 4. The Corporate Management of Digital Records

In the digital era, the widespread of personal computers and the almost complete absence of policies, rules and procedures for the management of digital records, document management - such as it is - often defaults to the user. He or she has complete autonomy to create any information wanted, manage it under personal 'rules' (self-created classification, naming, and retrieval systems,) and to delete any records he/she has created or received as part of the corporation's activities. The user is truly all-powerful! However, this information is clearly "corporate" and must be managed with institutional policies, regulations, procedures and tools.

The design and implementation of an institutional records registration system is one component of a set of tools created to manage corporate information and ensure that the information is transferred from the user's individual space to the institutional sphere. The corporate registration of records represents a process by which the responsibility of managing records is folded in under the institution's functions. Using this process, information is created according to certain rules (such as file naming), inserted into the corporate information structure (classification plan) and associated with a specific retention period. Moreover, records created under an institutional registration system cease to be the sole property of the user and become a corporate asset, managed under corporate rules and directives, retrievable and accessible to employees of the institution, under access rights compliance.

In order to accomplish this transfer to the corporate sphere, many institutions, including government bodies, are using standardized forms to capture the metadata needed to register records in corporate systems. These forms take into account document type, but are primarily established to capture information about organization functions and activities. The structured information held in metadata profiles is used to name, identify, describe, classify, manage (for the short and long term) and preserve the recorded information of a government department or agency. So, the form contains a series of fields that the user must capture or add to at document creation in order to save the record into the central institutional repository.

To establish a government-wide standard, many bodies have implemented standardized metadata profiles. More specifically, Li-

2. Conférence des recteurs et principaux des universités du Québec (CREPUQ), *La gestion des documents numériques des établissements universitaires du Québec* (février 2004) p. 17. Voir <http://www.crepuq.qc.ca/documents/arch/Rapport-GGDN.pdf>. Last consulted on July 6, 2007.

brary and Archives Canada (LAC) has developed a set of mandatory metadata elements which define a minimum set of requirements to be used at document creation and registration in an institutional repository for use across government. Because LAC has responsibility for the long term management of e-records, it was seen as imperative to establish this minimum list of metadata. Of course, any government ministry or agency may expand upon this core set to better manage its digital assets. However, this in no way reduces the necessity for departments and agencies to conform to the use of the minimum core set. We will discuss this challenge in more detail later in the present text.

## 5. The Theory: Metadata and Classification

In contrast to published information, a record (archival record) is the product of the functions, activities and business processes of a creator, whether this be an individual or a corporate entity. A record represents, in some ways, the proof that the activity took place in an institutional framework. There is, therefore, a vital link between the record and institutional activities and one can confirm that the record possesses a value of proof (documentary evidence) lacking in other types of documents or information elements.

In the paper-based world, one can grasp the role of an archival record within the activities of an institution thanks to its situation in an archival fonds. In this way, a document is part of a folder, (created in response to a clear organizational need) which is itself a part of a series, within the set of recorded information which comprises the archival fonds. Therefore, with paper records, it is possible to understand the state of things. In contrast, this is absolutely impossible with e-records where an archival fonds composed exclusively of digital records could be found on a variety of platforms – albeit CD, DVD or server. Understanding the logic of record, a folder, series and fonds simply by viewing the structure as displayed is an undertaking destined to failure from the outset. The only method to establish the links between these hierarchical elements and to maintain them is by using metadata. Metadata can play a variety of roles, most notably in the identification and description of records. At the same time, metadata assures the management of the records from their creation through to their long-term preservation. Moreover, the folder which is part of a series is integrated into a precise location in the classification plan. In this way a folder is situated within an activity and a function. In fact, the use of metadata is the only way to ensure that the records are evidence that an organizational activity was undertaken, so metadata assure the quality of the evidence of the archival record. It is obvious, then, that these metadata must be retained as long as the records are retained.

The concepts of this professional discipline - its approaches, its methodologies and tools - can and must be reinterpreted to encompass the digital transformation without denying or calling into question any fundamental principles. In this manner, the concepts of the fonds and of *respect des fonds* (provenance) remain relevant. This new perspective requires a different approach to the one traditionally used and according to which archivists have historically not intervened in the record lifecycle until record transfer for permanent re-

tention. From now on, however, archivists must intervene even before record creation, during the active stage. In collaboration with records managers and information technology specialists, they must work on the development of metadata necessary for archives management. In fact, if they wait until the time of records transfers to heritage institutions responsible for long-term retention, this could be 15, 20 or even 30 years in the future. Who knows what digital records will be like at that time? Given the rapid obsolescence of platforms, programs and equipment, it is necessary to act now. The same perspective highlights equally the relevance of managing the entire record lifecycle as well as an organic link between records management and traditional archival science.

## 6. The Practice: LAC and the Management of Canadian Federal Government Records

We have underlined the importance of managing e-records even before their creation, by the definition and implementation of e-record management systems. This is not a simple *a priori* task. Rather, when the mission of an institution (such as LAC) is to ensure the collection and preservation of the digital documentary heritage of Canadian government organizations, the task is even more arduous, not to mention enormous. We could describe this task as A CHALLENGING CHALLENGE, since LAC must design multi-level, multi-institutional plans to acquire archival material from federal departments and agencies.

To ascertain the scope of the e-records management challenge, we first examine the enabling legislation of LAC.

### **LAC's legislation and its mandate regarding the acquisition of archival records and 'documents at risk'**

In the preamble to the *Act to establish the Library and Archives of Canada*, the LAC mission is stated:

- (a) Preservation of the Canadian documentary heritage (published and non-published)
- (b) Creation of a knowledge institution in Canada its holding must be accessible to all, contributing to the cultural, social and economic advancement of Canada as a free and democratic society;
- (c) Facilitate in Canada cooperation among the communities involved in the acquisition, preservation and diffusion of knowledge;
- (d) **Serve as the continuing memory of the government of Canada and its institutions.**

Regarding destruction and disposal, the Act states that no government or ministerial record, whether or not it is surplus property of a government institution, may be disposed of, including by being destroyed, without the written consent of the Librarian and Archivist or of a person to whom the Librarian and Archivist has, in writing, delegated the power to give such consents. Regarding the tran-

sfer of records, the Act gives the Librarian and Archivist care and control of government or ministerial records that he or she considers to have historical or archival value and requires that any transfer be effected in accordance with any agreements for the transfer of records that may be made between the Librarian and Archivist and the government institution or person responsible for the records. The Act also allows for the promulgation of regulations prescribing **terms and conditions governing the transfer of records.**

The acquisition of government electronic records falls under Sections 12 and 13 of the *Library and Archives of Canada Act* and establishes new trusted services to support the transfer, care and custody of electronic government archival records from Government of Canada departments and agencies to LAC. Recently, LAC has been involved in the development of a Trusted Digital Repository (TDR) suite of services, mandated to preserve the documentary heritage of Canada and to serve as the continuing memory of the Government of Canada and its institutions, as we will see next.

### **New relationship between LAC and departments and agencies**

Under the auspices of LAC and the Treasury Board Secretariat of Canada, two Deputy Minister Roundtables were held in Ottawa in September and November 2006 devoted to the topics of Information Management and Recordkeeping. The main objective of these meetings was to build a consensus and engage departments and agencies in a Government of Canada-wide recordkeeping transformation effort. In fact, the goal is clearly to create a new culture around recordkeeping within the federal government, establishing a new relationship between LAC and departments and agencies. The mandate of the Assistant Deputy Minister (ADM) Recordkeeping Taskforce, which was established as a result of the Roundtables<sup>3</sup>, is to recommend a new recordkeeping regime for government. The Electronic Records Sustainability Work Group, one of the Working Groups within the ADM Recordkeeping Taskforce, focuses on the development of the components necessary to create a comprehensive strategy for e-recordkeeping. One of the desired outcomes is based on the acknowledgement that any e-records in all forms and formats meet acceptable recordkeeping and accessibility requirements. Presently, in the management of e-records for the Canadian government, there is no single authority responsible for this at the federal level. This is why a cooperation and a consensus amongst Canadian governments institutions is so important and valuable to achieve.

In the Terms of Reference of the ADM Recordkeeping Taskforce, Electronic Records Sustainability Work Group, the primary drivers and proposed deliverables are stated as follows:

#### **Primary Drivers**

- The *Management of Government Information Policy* identifies electronic records as the preferred record of official choice, and the legal community is currently adjusting the laws of evidence and procedure to reflect the prevalence of the e-record in the transaction of business.

3.<http://www.collectionscanada.ca/information-management/001/007001-5003-e.html>. Last consulted on July 6, 2007.



- Recordkeeping is integral to institutional accountability, transparency, compliance and performance.
- Recordkeeping requirements are fundamental to e-systems development
- E-records created by public servants at the desktop require disposition and integration within e-systems under corporate custody and control.
- E-records of ongoing and long-term business value to government are sustainable over time.

### **Proposed Deliverables**

- I. an integrated work plan for e-recordkeeping in GC which includes a governance model for a comprehensive e-record sustainability strategy
- II. recommendations for the required changes that will enable the development, implementation and enforcement of e-recordkeeping.
- III. implementation plan for a GC-wide Trusted Digital Repository Network.

Since this initiative is still in its infancy, the results are not yet visible. Nevertheless, an important process has begun, in a way that covers the totality of Canadian government institutions and not simply at the level of individual departments and agencies. This initiative is truly adopting a global perspective built on two pillars: the archival tradition related to the transfer and acquisition of records by a heritage institution and as well elements basic to records management, viz, intervention from the moment of record creation. In fact, it is necessary to put in place a system whose components ensure effective and efficient management of records of business value in a complete and seamless continuum. Moreover, e-records are recognized as the preferred format for the management of government information.

### **Present State of e-Records Management**

In fact, many government organizations manage their records of business value well, this is not the case for the older archival records which have been retained on site in these institutions. Although these archival records should normally have been transferred to LAC or to one of the Federal Records Centres located in the regions, they have been retained locally and often in poor physical condition.

In the spring of 2007, a survey on the state of records management in 47 government departments and agencies was undertaken by the Government Records Branch at LAC. The main objective of this *Survey on the Conditions of Archival Records in Federal Institutions*, or CARFI, painted a clear and uncompromising picture of the state of documents at risk within federal departments and agencies. The CARFI survey conclusions and recommendations stress the necessity for a sustained and more substantial relationship between government departments and LAC and on the importance of defining re-

cordkeeping guidelines as well as on the need for development and training of departmental staff implicated in this sector of records management.

With respect to issues related specifically to electronic records and systems, it became clear that the majority of institutions do not have procedures for migration or updating of records, so that only the original format is available. Even though almost 65% of the responding organizations have an EDRMS, the employees of these departments do not register records in the system. As a result, we estimate at only half of the records of archival value are captured in institutional EDRMS.

Already the vast majority of departmental e-records are office documents (textual records), products of word processing and spreadsheet software. We acknowledge that technology is an essential factor to ensure record reliability, integrity, authenticity and preservation. On the one hand, it is unquestionably necessary to migrate these records to more current software versions and formats; on the other hand, a completely technological solution will not succeed as not all users register their records in an EDRMS. In that perspective, we can say that e-records are at risk in the Government of Canada and that part of the institutional memory may be lost for ever. At the very least, then, we see the necessity to get involved at the beginning of the record life cycle or even before, by establishing functional requirements for EDRMS and by introducing requirements for mandatory metadata to the active management of records. Moreover, the need for training and development is inescapable if the goal is to ensure that employees who must engage in recordkeeping activities do so with a basic understanding, if not a high degree of professionalism.

## 7. Solutions

Government departments and agencies do not and/or will not necessarily all use the same EDRMS. And the LAC Act does not allow the imposition on any department of a particular EDRMS. In order to ensure a minimal standardization of electronic records management, Canadian federal organizations, led by LAC, have collaborated in the design of a metadata application profile for e-records. By establishing a cluster of mandatory metadata, the Canadian government, including LAC, aims to establish guidelines relating to the creation, identification, retrieval, management and preservation of these documentary resources. The Canadian government produced two documents related to the use of the metadata for e-records: *The Government of Canada Records Management Metadata Standard*<sup>4</sup> and *The Government of Canada Records Management Application Profiles*<sup>5</sup>. The latter establishes the core set of elements necessary to ensure the authenticity, reliability, integrity and usability of records as espoused by ISO International Standard 15489-1 and ISO Technical Specification 23081-1. Moreover, the Treasury Board of Canada Secretariat, *Guidelines for Metadata Application Profiles in the Government of Canada*<sup>6</sup> to describe how to write an application profile.

The Government of Canada records management metadata set (see Appendix 1) follows the format advocated by ISO 11179 *Information Technology – Metadata Registries* and is devoted to Metadata Assignment for the active phase (records creation) of the record life

4. <http://www.collectionscanada.ca/information-management/002/007002-5001-e.html>. Last consulted on July 6, 2007.

5. <http://www.collectionscanada.ca/information-management/002/007002-5002-e.html>. Last consulted on July 6, 2007.

6. The Government of Canada Records Management Application Profiles. <http://www.collectionscanada.ca/information-management/002/007002-5002-e.html>. Last consulted on July 6, 2007.

cycle. The Table shows fifty metadata elements used in the management of recorded information.

From the fifty metadata elements devoted to records management presented in the Table, some conclusions can be drawn:

- 34 elements are mandatory (including mandatory when applicable).
- 16 remain optional.
- 31 may be auto-populated by any EDRMS, an important means of reducing the risk of human error and of reducing the requirement for end-user intervention
  - 10 (distinct elements) are defaultable or established by default via the system (EDRMS)
  - A certain number of elements may be auto-populated by the system or by the user.

In consequence, in the assignment of metadata at the active records phase, the number of elements to be populated by the records creator must be low in order to encourage user compliance.

### **Metadata Assignment Based on Function or Role**

Rather than providing a simple alphabetical list of the metadata elements, it seems important to distinguish their role at creation or registration in an institutional system. In this way, one can distinguish four groups of elements according to their use at this first phase of the record life cycle. We present here the elements that are MANDATORY for records management in the Government of Canada according to these four attributes.

#### **1. Metadata Elements for Record Identification**

- Record Title
  - 8.27 File Code
  - 8.28 File Name
  - 8.31 Identifier
  - 8.45 Title
- Author, Unite, Institution involved in the record creation
  - 8.16 Creator
  - 8.34 Office of Primary Interest
- Language of the record
  - 8.32 Language of the record
- Date of creation
  - 8.2 Addressee
  - 8.12 Compound Record Link

8.13 Container

## **2. Metadata Elements for Records Description**

- Time Period Span

8.14 Container From Date

8.15 Container To Date

8.35 Date of Record

- Compound Record File (compression methods, encryption, location)

8.17 Data Format

8.30 Format Medium

## **3. Metadata for the Management of a Record**

- Access Rights Limitations / Controls, Use Conditions

8.1 Access Rights

8.36 Record Locked

8.37 Releasable to

8.41 Security Clearance

8.42 Sensitivity

- Retention Period

8.19 Disposition Action

8.20 Disposition Authority

8.24 Event Date / Time

8.26 Event Type

8.33 Location

8.38 Retention Period

8.39 Retention Trigger

8.40 Retention Trigger Date

- Vital Record

8.23 Essential Status

## **4. Metadata Related to Metadata Entry**

- Entry Sequential Identifier / Identifiant séquentiel de l'entrée

8.3 Agent Individual Identifier

8.4 Agent Individual Name

### 8.5 Agent Institutional Name

### 8.8 Agent Role

### 8.9 Aggregation

To summarize then, metadata must be added to any digital record; the complete record will consist of the record itself WITH the metadata set associated with it as a necessary incidental unit, since the metadata explains the content, the container and the context of the record. Metadata must be captured at the time of creation of the record. As far as possible, the EDRMS must be able to generate automatically metadata related to a specific creator, position or activity in order to reduce human intervention, and the associated risk of errors as well as to increase the speed of record registration within the system.

In an ideal world, the management of digital documents would require that records destined for transfer to LAC be transferred as soon as possible after creation, since it is illusory or even illogical to wait some 10, 15 or 20 years to acquire this information. By that time, these records will likely be 'non-readable' because platforms/software/equipment used to create and manage them have become obsolete. Delivery date has yet been identified for this, it is nonetheless a tremendous challenge confronting LAC and other Canadian government institutions.

## 8. Virtual Loading Dock and Trusted Digital Repository

The development of a suite of Trusted Digital Repository (TDR) services is central to LAC's capacity to meet its legislative obligations to acquire and preserve more of the rapidly growing volume of Canadian digital documentary heritage. A TDR provides and manages reliable, long-term access to digital resources. It is organized to address typical challenges such as the volatile nature of digital objects and the change in the information technologies used to create and access them.

A TDR suite is not purely or exclusively a technological infrastructure *per se*, devoted to the storage, maintenance and preservation of digital objects, even though it implies equipment, devices, software and other computer components. A TDR is more an agreement or even a commitment between a heritage institution and its community, to ensure that the enabling infrastructure will evolve over time in order to continue to provide reliable, long-term access to digital records. The heritage institution commits to develop and implement policies, methods, procedures, standards, audits, verification and best practices to facilitate the maintenance and preservation of the four characteristics of the records in the TDR, *viz*, authenticity, integrity, reliability and useability.

Different TDRs may be used for various applications and types of files. For instance, one TDR might be used for traditional text records (word processing and spreadsheet files), whereas audio material, still images, moving images (with sound) or even geo-spatial images require particular digital repositories. Moreover, as LAC will be required to 'ingest' records extracted from various EDMS,

the TDR suite must be standards compliant and based on the Open Archival Information System Reference (OAISIS) Model.

## 9. Conclusion

### Theory

E-records, like other records, are a by-product of a business process, an activity or a function of a creator, whether an individual or a corporate body. As such, a record represents an authentic witness of a past activity that has taken place within an organization; this is the characteristic of a record that gives its evidential value. This quality of a record, and of archival science, is what distinguishes them from elements of information and library science. A record is not a discrete item or an isolated piece of information; it cannot be dissociated from the person or the corporate body by whom it was created. To do so, renders the information it contains meaningless and negates/cancels its quality of “record-ness”.

In an EDRMS, a record is no longer the document itself, but the ‘physical object’ with all its relationships, from record to folder, to series, and to the fonds. The use of standardized metadata creates and sustains the relation or concordance between the record and the business process, activity, function, and mission of a specific institution. The metadata associated with the e-record defines its context and is the means by which the record carries its quality of “record-ness”. Using metadata is the only way to represent the context in which the record is created, when, by whom, for what purpose or to achieve what goal.

The principle of provenance and the concept of evidential value remain highly relevant and current in modern archival science and records management theory. However, the new context of the digital environment requires a new way of thinking. The principle of provenance and the sanctity of original order must no longer be considered as static or used to express a rigid structure (organization, records) but rather be understood as dynamic ideas, allowing the delimitation, comprehension and analysis of an organization and its records information.

### Practice

As we deal with digital records, archivists and records managers must be fully involved in the complete record life cycle, even before the creation of records - from the selection, design and implementation of any ERDMS. This is the only way to ensure that record authenticity, reliability, integrity and usability are safeguarded. At ingestion into long-term preservation facilities, archivists will doubtless have to add elements to the existing metadata used for active management but will NOT DISPOSE OF any contextual information, to ensure a seamless recordkeeping process. The challenge of managing e-records is not purely or even predominantly a technical or technological issue. The main problem or real challenge resides in how to cope with the people aspect, with human behaviour. E-records management implies a complete change of culture that will make the records creator responsible for the management of institutional re-

records related to his/her specific tasks or portfolio. It is not a stand-alone activity, as recordkeeping specialists will play an important role in providing the regulatory framework on which the creator must rely. However, if the creator is not willing to “play the recordkeeping game”, no ERDMS implementation will be a success. Consequently, communication with and training of end-users will be of primary importance.

For archivists, a paradigm or conceptual shift is required – from passive keeper of archival records and custodian of heritage physical documents or objects to active, engaged professional who handles digital information appropriately. This also implies a thorough training program based on academic education and/or continuing education through workshops on specific topics of the management of digital information. Archivists are not required to become programmers, but they will need to understand the different steps in which e-records are involved. Archival concepts, methodologies, policies, tools and procedures will continue to play a major role in the proper management of all records and are a *sine qua none* for dealing with digital records.

“Finally, it is important to highlight that for every dollar invested in the acquisition of a software, we must expect to spend five more on introduction and change management; human factors in the implementation process for a project to manage digital records, and not technological aspects, constitute the weakest link in implanting such a project”<sup>7</sup>.

7. Conférence des recteurs et principaux des universités du Québec. *Op cit.*

## Appendix : Government of Canada Records Management Metadata Set

The elements of the following table deemed “mandatory” or “mandatory, if applicable”, may be defaulted to a pre-determined value in order to reduce end-user involvement.

### Legend:

**M** = Mandatory **MA** = Mandatory, if applicable **O** = Optional

Element Reference Number	Element	Obligation	Probable Auto-population by EDRMS	Defaultable	Records Manager Input	End-User Input
8.1	Access Rights	M	-	X	-	X
8.2	Addressee	M	X	-	-	X***
8.3	Agent Individual Identifier	M	X	-	-	-
8.4	Agent Individual Name	O	X	-	-	-
8.5	Agent Institution Name	M	X	-	-	-
8.6	Agent Institutional Entity	O	X	-	-	-
8.7	Agent Position Title	O	X	-	-	-
8.8	Agent Role	M	X	-	-	-
8.9	Aggregation	M	X	-	-	-
8.10	Approved By	O	-	-	-	X
8.11	Approved Date	O	-	-	-	X
8.12	Compound Record Links	MA	X	-	-	-
8.13	Container	MA	-	X	X	-
8.14	Container From Date	MA	-	-	X	-
8.15	Container To Date	MA	-	-	X	-
8.16	Creator	M	X	X	-	X***
8.17	Data Format	M	X	-	-	-
8.18	Description	O	X	-	-	X
8.19	Disposition Action	M*	X	X	X	-
8.20	Disposition Authority	M	X	X	X	-
8.21	Encryption Description	O	-	-	-	X
8.22	Encryption Status	O	-	X	-	X
8.23	Essential Status	M*	-	X	X	X***
8.24	Event Date/ Time	M	X	-	-	-
8.25	Event Description	O	-	-	-	X



Element Reference Number	Element	Obligation	Probable Auto-population by EDRMS	Defaultable	Records Manager Input	End-User Input
8.26	Event Type	M	X	-	-	-
8.27	File Code	M*	X	-	X***	X
8.28	File Name	M*	X	-	-	-
8.29	Format Extent	O	X	-	-	X***
8.30	Format Medium	M	-	-	X***	X
8.31	Identifier	M	X	-	-	-
8.32	Language	M	-	X	-	X
8.33	Location	M*	X	X	X***	-
8.34	Office of Primary Interest	M*	X	-	X	-
8.35	Record Date	M	X	-	-	X
8.36	Record Locked	M	-	X	***	X
8.37	Releasable To	MA	-	-	-	X
8.38	Retention Period	M*	X	X	X	-
8.39	Retention Trigger	M*	X	X	X	-
8.40	Retention Trigger Date	MA**	X	-	X	-
8.41	Security Clearance	M	X	-	-	-
8.42	Sensitivity	M	-	X	-	X
8.43	Subject	O	-	X	-	X
8.44	Supplemental Markings	O	-	-	-	X
8.45	Title	M	X	-	-	X
8.46	Trustee Individual Name	M	X	-	-	X***
8.47	Trustee Institution Name	O	X	X	-	X***
8.48	Trustee Institutional Entity	O	X	X	-	X***
8.49	Type	O	-	X	-	X
8.50	Usage Conditions	O	-	-	-	X

\* Indicates the element is mandatory at record level or mandatory at file level. Must be mandatory for at least one level; may be mandatory at both levels.

\*\* Indicates the element is mandatory, if applicable, at record level or mandatory, if applicable, at file level. Must be mandatory, if applicable, for at least one level; may be mandatory, if applicable, at both levels.

\*\*\* Indicates a secondary source for inputting the information. For example, although the value for Creator may be input either via auto-population by the EDRMS or by the end-user, the primary means of contribution will be by the former method and not the latter.

<http://www.collectionscanada.ca/information-management/002/007002-5002.65-e.html>

Last consulted on July 6, 2007.

