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Library and Archives Canada has a wide mandate to preserve and provide access to Canadian published heritage, records of national significance, as well as to acquire the records created by the Government of Canada, deemed to be of historical importance. To address this mandate, Library and Archives Canada has undertaken the development of a digital preservation infrastructure covering policy, standards and enterprise applications which will serve requirements for ingest, metadata management, preservation and access. The purpose of this paper is to focus on the efforts underway to engage digital recordkeeping activities in the Government of Canada and to influence and align those processes with LAC digital preservation requirements. The LAC strategy to implement preservation considerations early in the life cycle of the digital record is to establish a mandatory legislative and policy framework for recordkeeping in government. This includes a Directive on Recordkeeping, Core Digital Records Metadata Standard for archival records, Digital File Format Guidance, as well as Web 2.0 and Email Recordkeeping Guidelines. The expected success of these initiatives, and collaborative approach should provide a model for other digital heritage creators in Canada.



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# Preserving the Digital Memory of the Government of Canada: Influence and Collaboration with Records Creators

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## Abstract

Library and Archives Canada has a wide mandate to preserve and provide access to Canadian published heritage, records of national significance, as well as to acquire the records created by the Government of Canada, deemed to be of historical importance. To address this mandate, Library and Archives Canada has undertaken the development of a digital preservation infrastructure covering policy, standards and enterprise applications which will serve requirements for ingest, metadata management, preservation and access. The purpose of this paper is to focus on the efforts underway to engage digital recordkeeping activities in the Government of Canada and to influence and align those processes with LAC digital preservation requirements. The LAC strategy to implement preservation considerations early in the life cycle of the digital record is to establish a mandatory legislative and policy framework for recordkeeping in government. This includes a Directive on Recordkeeping, Core Digital Records Metadata Standard for archival records, Digital File Format Guidance, as well as Web 2.0 and Email Recordkeeping Guidelines. The expected success of these initiatives, and collaborative approach should provide a model for other digital heritage creators in Canada.

## Introduction

Within the context of its mandate to "preserve the documentary heritage of Canada for the benefit of present and future generations" and "be a source of enduring knowledge accessible to all," LAC has set a key objective to become a truly digital institution.

The *Library and Archives Canada Act* (2004) gave LAC new powers to acquire Canadian Internet publications under Legal Deposit and to collect a representative sample of Canadian websites for the purpose of preservation. LAC has ongoing responsibility for appraising Government of Canada records and preserving those with archival value, and this extends to records in digital form. Also, from private sources, LAC acquires digital records including photographs, documentary art, geomatic material, music, architectural material, manuscripts, and email. Beyond the digital content that it collects, LAC is also a digital content

creator. Its digitization program generates terabytes of data each year.

LAC aims to become as capable of acquiring, describing, preserving and making accessible digital documentary heritage as it has long been for analogue material. To realize this goal, change is required in institutional policy, work processes, technology, and staff expertise. Work is underway to: establish policy, strategies, practices and tools to support the development of the digital collection and to make it known, accessible and used; develop and implement the necessary technological and procedural infrastructure to support the acquisition, management, and preservation of digital documentary heritage, with the goal of becoming a Trusted Digital Repository; review and update existing LAC guidelines for creators of digital documentary heritage material.

Library and Archives Canada is in the midst of significant enterprise application development building out the trusted services required for our digital preservation infrastructure. Known as the LAC TDR Project, it is funded through a Treasury Board Submission and scoped to textual Government of Canada electronic records and electronic Legal Deposit. Based on OAIS and TRAC it aims to provide not only the requisite functions of a trusted repository, but also to provide LAC operational efficiencies and strong business workflows.

To reach these goals LAC is reaching out to content creators and the purpose of this paper is to highlight that effort within the context of the Government of Canada. In keeping with the theme of this conference, the approach is intent on "re-positioning preservation awareness and services further upstream in the digital lifecycle." Following is an overview of the evolution of the framework which enables LAC's acquisition of digital resources, followed by an overview of government-wide initiatives to improve digital preservation, as well as interventions specifically developed by LAC.

## **Value management framework for Acquisition: Sustainable, Sufficient, Significant, Society**

At the same time, LAC is designing an integrated acquisitions strategy that focuses on a refined definition of significance for the organization and is filtered by clarified notions of sufficiency and sustainability. In line with the core principles of our organization's new modernization exercise, acquisition needs to be integrated, value driven, evidence based, consultative and collaborative. To serve the public good, the organization needs to ensure that it is trusted and valued by the Canadian public. Presently, the acquisition of documentary heritage at the national level is neither linked nor shared with other institutions in formal arrangements as a formal corporate strategy. Whether material stored physically or virtually, it all is done by LAC.

The way forward to tackle all of these issues requires a renewed focus around acquisition; LAC will adjust its priorities and mechanisms in three critical areas: the identification of documentary heritage that is most important for Canadians (significant); the quantity of information it can acquire (sufficient) and support (describe, manage, make accessible, and preserve for the long term) (sustainable); and the identification of priority areas of acquisition (society). Additionally, LAC needs to consider new roles around partnerships and interventions compete with a governance framework to manage a distributed network of institutions working with common objectives.

These principles are already applied to some degree to the acquisition of records of the Government of Canada. LAC's model of macro-appraisal has always focused on notions of significance and evidence, and has recently begun to integrate notions of sufficiency, in particular with regards to case files, where a new records disposition authority allows the archivist to determine that LAC has received sufficient documentation in a given series of records, and to declare that further files will not be considered archival. LAC has sometimes looked at sustainability in the rationalizing of existing collections, but increasingly questions regarding the feasibility and cost of sustained access and preservation will be asked at the acquisition stage.

### **Recordkeeping Crisis**

The Librarian and Archivist of Canada recognized the need to raise the collective challenges of recordkeeping across government to the executive level following the Auditor General's Report of 2003 which identified shortcomings in government's records disposition program. Compounded by the particular

public administration challenges associated with governance in the digital era, and computer-based communications technology, these issues were of sufficient profile and importance to attract the attention of the Clerk of the Privy Council and the Secretary of the Treasury Board (Canada's two highest-ranking public servants), who supported the Librarian and Archivist in the creation of a series of Deputy Minister Roundtables on Information Management and Recordkeeping in the Fall of 2006.

Acknowledging that there was a crisis in RK, participants in these Roundtables advocated a strategy utilizing a results-based approach, focusing primarily on the records that were of business value. They also felt it would be necessary to examine the benefit of a formal compliance environment.

### **Directive on Recordkeeping**

The ultimate result has been the creation of a mandatory *Directive on Recordkeeping* which places the responsibility for good recordkeeping on program managers in government. Compliant recordkeeping involves defining information resources (including published and unpublished information in any medium or format) of business value in relation to the mandate of the department, and then management of those resources by such means as a classification scheme or taxonomy, capture in a repository, documented destruction etc. The concept of business value is connected to the value framework mentioned above, but requires a definition of value at the moment of creation of an information resource. The Directive came into force in June 2009.

The Directive followed on revisions to the Government of Canada Information Management Policy which had been strengthened and clarified the year previously. Clear roles and responsibilities for accountability and the duty to document were articulate for the Government of Canada, and preference was given to the creation and maintenance of information in electronic form.

In addition, the governance structure for the management of information in government has been revised and renewed to include consultation with business program managers. Canada's Treasury Board Secretariat takes the lead on implementing the IM Policy and Directive, and consults with IM experts in government through a series of interdepartmental committees that it co-chairs with representatives from LAC.

### **Key Government of Canada Initiatives: Influencing Content Creators**

Building on the *Directive on Recordkeeping*, several guidelines has been drafted or will be drafted in the immediate future to address specific recordkeeping needs within the Government of Canada. To address immediate

needs, guidelines on email and social media have been drafted and are undergoing consultation. The guidelines suggest best practice and advise users on implementation of the requirements of the Directive in these specific environments. Guidelines on business value, repositories, documented disposition and litigation response are examples of other guidelines under development.

Procurement is centralized for the Government of Canada through the Department of Public Works and Government Services. PWGSC along with LAC and Treasury Board Secretariat, establishes functional requirements for EDRMS and procures products for use in departments. Recently, PWGSC has proposed a shared services model whereby they will manage digital information resources for departments centrally. This opens possibilities for consistent configuration and metadata and streamlined transfer of digital information resources to LAC. Future possibilities include development of a network of TDRs for preservation of records and data of long-term operational value by the departments themselves.

Clearly the consideration of archival and preservation requirements at the time of creation is preferable and has been the catalyst for the legal and technological framework being implemented for recordkeeping in the Government of Canada. However, there remains a legacy of both paper and electronic records that were created before such influence existed. The true extent of the legacy of electronic records in government is largely unknown, but is undoubtedly vast. It is known that electronic records exist on a variety of hard media as well as shared drives and personal drives. LAC is developing a legal framework for risk-based disposition of this information, and is evaluating tools to automate the analysis of electronic content.

### **LAC Initiatives Influencing Government of Canada Creators: eRTA, Core Set, LDFR**

The legislative and policy framework through which government archival records are transferred to LAC is formalized through agreements known as Records Disposition Authorities (RDA). The research required to make government records disposition decisions is known as macro-appraisal. It includes a functional analysis of a government department – government functions are appraised for whether they are sufficiently important to warrant the collection of archival records. If they are, the appraising archivist then determines which records to acquire from the function, for example, selecting policy files only, or perhaps policy and operational files if the function is deemed sufficiently important. The high-level functional analysis is described in the archival appraisal report, an internal document, while the specific collecting decisions are written into legally-binding terms and

conditions that accompany the issuance of a records disposition authority by the Librarian and Archivist of Canada.

Records Disposition Authorities are issued by the Librarian and Archivist to government institutions under the powers of Sections 12 and 13 of the LAC Act, to: 1) provide departments with legal permission to dispose of records no longer having operational value or utility and 2) require departments to transfer records determined to have historical or archival value to the control or oversight of LAC under the terms and conditions of negotiated agreements. Records Disposition Authorities are issued to departments either on an institution-specific or multi-institutional basis, depending on the nature and scope of the business functions and activities under assessment and evaluation.

### **eRTA, Library and Archives Canada eRecord Transfer Application**

In 1996 the Government of Canada sought and selected a single Records/Documents/Information Management system known today as RDIMS. It is a shared system, but installed separately in each participating department and used for the management of records, electronic documents and information for the government of Canada. The RDIMS suite of products is managed by Public Works and Government Services (Canada). Electronic records managed within RDIMS fall under RDAs and are identified for transfer to LAC.

Unfortunately a key piece of functionality was not developed within RDIMS, which is capacity for identification and transfer of electronic records, along with their associated metadata. This represents a significant challenge for departments and LAC when trying to comply with Record Disposition Authorities.

Given that the transfer functionality does not exist with RDIMS and given that Public Works was not willing to develop it, LAC took the decision to build a plug-in for RDIMS to enable the transfer of electronic archival government records. The plug-in is called eRTA (eRecord Transfer Application) and provides departments integration with LAC's Record Disposition Authority Control System along with the ability to search and identify electronic records ready for archival transfer, copying and packaging these records, encrypting the package using the Entrust framework and transferring to LAC using Secure FTP. A "Transfer History" provides historical data to the department on all archival records transferred.

LAC has partnered with 3 government departments in the piloting of the software; Treasury Board Secretariat of Canada, Department of National Defence and Transport Canada. But LAC cannot afford technical support for

each and every installation and therefore LAC has taken another unique decision with respect to eRTA.

eRTA will be made available as an “open source” application to all departments on the Government of Canada wiki, known as GCPEDIA. GCPEDIA is only accessible via the Government of Canada network and contributors must be on a computer on a government (.gc.ca) network to be able to access it. Departments will be asked to download and install the software within their own RDIMS environments with the support of LAC archivists and technical experts. GCPEDIA will continue to be an important communication and collaborative space for Government of Canada creators.

### **eRTA Archival Core Set (Metadata)**

Government of Canada electronic documents acquired as archival records stipulate that the business metadata related to the documents forms essential components of the “archival record”. The Government of Canada has invested in the development of a high level data dictionary known as the Government of Canada Records Management Metadata Application Profile (RMAP). This profile outlines the metadata that should be captured for electronic records within Government of Canada electronic document management systems. However, this set has not been formally implemented within RDIMS nor was an exchange standard established. LAC has taken the step to 1. Identify core metadata elements required for *archival* electronic record transfer (Archival Core Set) and 2. Develop a XML exchange standard for shipping the requisite metadata from RDIMS to LAC’s Trusted Digital Repository virtual loading dock. Obviously the guarantee of structured metadata enables the smooth transition, authenticity and integrity of content and metadata through the Submission process to archival storage.

As a result, the Archival Core Set required a mapping of elements from RMAP, to the eRecord Transfer Application to MODS. MODS is the descriptive metadata standard used within our Trusted Digital Repository application, encapsulated within a METS construct. Descriptive metadata elements for the file and item level descriptions are then defined for capture within our legacy archival management system and public access system (MIKAN). The metadata will be converted yet again to MARC XML for automatic loading to MIKAN.

From a metadata perspective then, the LAC requirements for archival transfer of electronic documents are now embedded at the time of creation, through the implementation of the Records Management Metadata Profile and translation of core archival metadata elements via the eRecords Transfer Application.

## **LAC Local Digital Format Registry: File Format Guidelines for Preservation and Long-term Access**

Government of Canada departments and agencies have long sought guidance from LAC on the subject of file format standards for long term preservation and for transfer. LAC has now developed a set of guidelines for a broad audience including the public, academic and private sectors. Whether it is a government department producing a budget or a citizen self-publishing, the guidelines are intended to provide guidance on which digital file formats are most suitable for preservation and long-term access.

The guidelines, to be published shortly on the LAC website, also serve as the policy foundation for the LAC Local Digital Format Registry (LDFR), the underpinning specifications for file format normalization and migration services within LAC’s trusted digital repository.

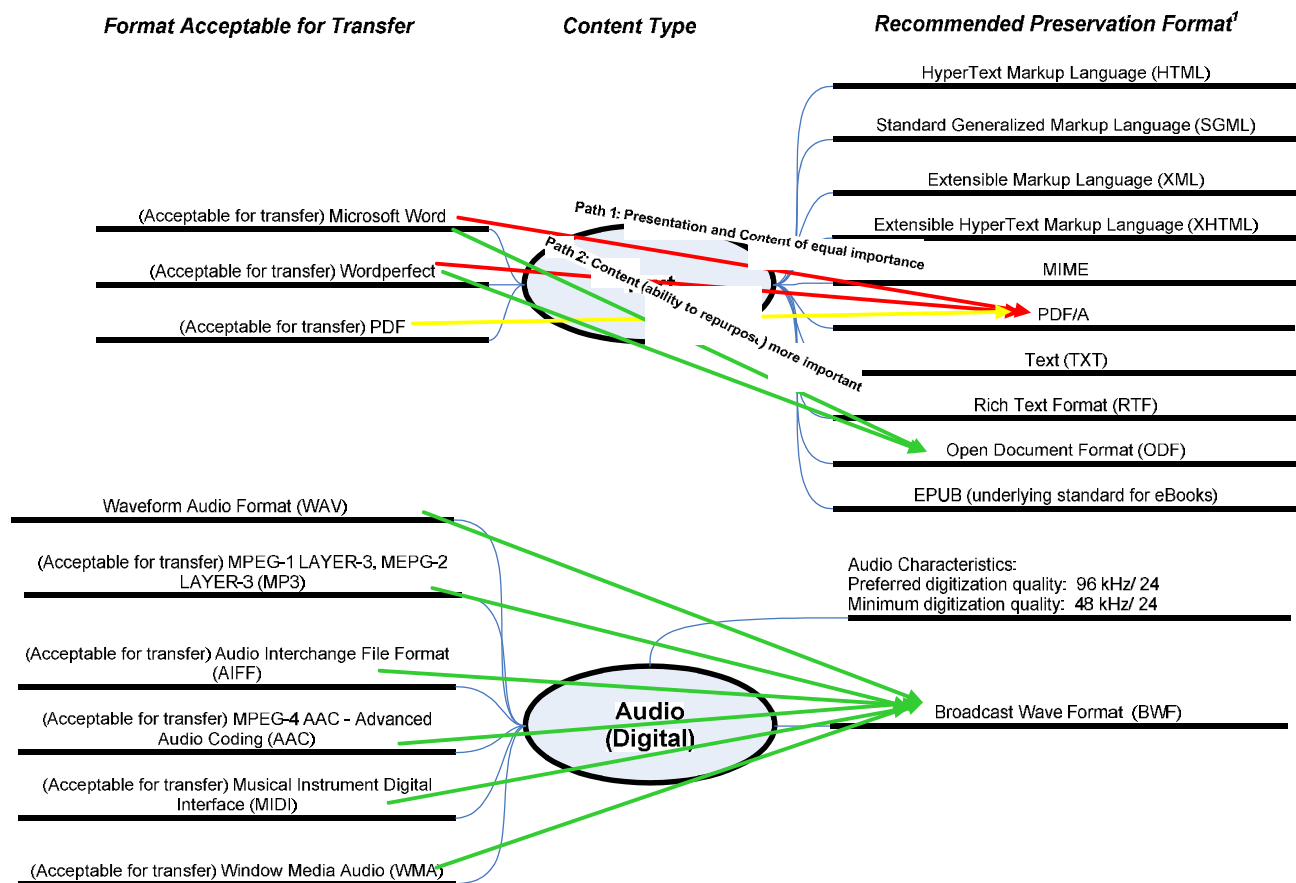
LAC’s LDFR categorizes file formats that are “recommended” and those that are “acceptable” for use. Those identified as “recommended” are being promoted by LAC because they are best suited for both the transfer and long-term preservation of digital information. LAC does acknowledge that there are many more file format types that are commonly used among content creators. As such, a number of file format types have been identified as “acceptable” indicating that they are acceptable for transfer to LAC for preservation, but will be converted for long-term preservation.

Where possible, a preference has been placed on the selection of non-proprietary national and international standards, or de facto standard industry formats. De facto standard formats are widely used and recognized formats that have become industry standards because of their ubiquitous use and support, and not because they have been formally approved by a standards organization.

LAC has established the following criteria for evaluating file formats for long-term preservation and access: openness/transparency, the extent to which the format has been formally adopted by other memory institutions, stability/compatibility, interoperability, and standardization.

Based on our evaluation results, the LDFR then presents the normalization and migration paths which will be followed. As an example seen below, for Digital Audio files the preferred file format is Broadcast Wave Format (BWF). For Text files LAC will choose to normalize to either PDF/A if presentation and content are of equal importance or to Open Document Format (ODF) if ability to repurpose content is more important.

## Library and Archives Canada Format Guidelines – Normalization/Migration Paths



<sup>1</sup> All recommended preservation formats are acceptable for transfer

Federal government departments need this kind of guidance not only for transfer purposes, but as well to ensure the long term viability of records of business value which have very long retention periods. LAC may not only encourage compliance with the LDFR, but could require approved formats for transfer through the Terms and Conditions of a Records Disposition Authority, as discussed above.

### Conclusion

LAC's development of a robust technological solution for trusted digital preservation sits on a foundation comprised of a strong policy imperative for government departments to create and manage digital records in the first place, in a manner that instills best practice and the application of preservation standards. The challenge remains to extend this influence to non-

governmental creators of our digital documentary heritage, where the mandatory instruments do not apply. A strategic acquisition approach where creators are targeted and standards for content creation and preservation are agreed upon and applied will further bolster LAC's capacity to ensure the continuing digital memory of Canada.

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