

Merging the Old with the New: The Management of Electronic Records in Canada in Theory and Practice

Dr. Luciana Duranti

Chair and Professor, Master of Archival Studies

University of British Columbia

The management of electronic records in Canada has been greatly influenced by a strong legislation that allows archival institutions to exercise control over records creation and maintenance, by the early recognition of the challenges presented by electronic records and the consequent development of strategies, guidelines, and policies, by an experience in the archival acquisition of electronic records that dates back to the 70s, and by the existence of dedicated programs of graduate education that have fostered, nurtured, developed and disseminated scholarly research on the subject. Thus, Canadian practice is largely informed by, and in turn informs, a strong theory of the record, and uses methodologies that are consistent with those adopted for traditional records. This fundamental coherence can be found in the exercise of all archival functions involving electronic records, from control on record creation to selection, preservation and access, and derives from a deep understanding of the purpose of those functions and of the nature of the material itself.

The Canadian approach to the management of electronic records is international and interdisciplinary in character. It uses knowledge gathered from the application and elaboration of diplomatic and archival concepts, analyses and methods, and from an understanding of jurisprudence, informatics, management, and of the areas of activities by which the records are generated,¹ and it knows no geographical or cultural boundaries when it comes to finding the best strategy, accepting involvement in several research initiatives worldwide. Although, given

¹ Canada subscribes to the concept of total archives, thereby preserving in public archival institutions private and public records, records in all media, and records generated by all kinds of activities (e.g., creative, performing, scientific).

the rapid obsolescence of technology and unpredictable direction of new developments, and the incipient advent of electronic government, the management of electronic records in Canada needs continuing monitoring, revisions, and research, it has to be recognised that, in the international context, it can be considered among the most advanced, primarily because it has consistently strived to integrate traditional methods with new ones, rejecting impulsive pragmatic choices and opting for the ongoing development of a solid theory.

Although this general statement applies to all Canadian archives, one has to recognise that very few of them have had to deal with electronic records as yet, and that, of these, only the National Archives and the British Columbia provincial archives have done so consistently for a significant length of time. In consideration of the fact that this session is about the “state of the art” in the management of electronic records, I will focus my observations on the present situation of the National Archives of Canada, and stipulate that it generally represents both the direction towards which the other Canadian public archival institutions are heading and the example that organizational archival programs are watching and aiming to reproduce in some measure, according to their specific circumstances.

The National Archives of Canada has been for over thirty years a leader in the management of electronic records, thanks to its consistent effort to root its strategies and methods on a strong theoretical foundation and on ongoing research, and to use legislation and regulations, policies and guidelines as primary means of dissemination of archival requirements among records creators. Thus, the National Archives of Canada has been a major contributor to the InterPARES research project, a collaborative international effort having the purpose of developing methods of preservation of the authenticity of electronic records. Its input to the articulation of an intellectual framework for the development of international, national and organizational policies, strategies and standards reflects both its present situation and the direction it intends to take.

Therefore, I am going to describe the InterPARES intellectual framework and to compare with it the policy and circumstances of the National Archives.

The InterPARES Project intended to provide as its final product a framework for the articulation of policies, strategies and standards by international entities, national states, and all kinds of organizations, ensuring that they will be well grounded and consistent. Of course, to make these policies, strategies and standards effective requires developing them in light of applicable laws and regulations; general policies concerning archives, records management, information technology, and client service; and realistic assessments of resource availability and stakeholder commitment. However, the intellectual framework is the necessary formulation of the principles and criteria to which any policy, strategy or standards should be inspired.

An intellectual framework is not intended as a tool to develop theory; rather, it can be used as a tool to promote and communicate a shared understanding of the key concepts, issues and proposed solutions related to the long-term preservation of authentic electronic records. It includes principles and criteria. Principles are statements that have general validity in a given sector or field. In applied sciences, they are conceptual statements on which a science, an argument, or a reasoning is based, derived from the observation of individual facts. Criteria are the norms on which distinctions are based, judgements are made, and different lines of action or conduct are decided.

The extensive and in-depth investigations of the InterPARES project over three years have been distilled into a set of 14 principles and corresponding criteria for the development of policies, strategies and standards.

They are as follows:²

² The table of principles and criteria is an edited copy of the one included in the Strategy Task Force report and published in the *Long-Term Preservation of Authentic Electronic Records. Findings of the InterPARES Project*, available at www.interpares.org. The following discussion of the National Archives of Canada situation with respect to the intellectual framework provided by InterPARES is from the contextualization of the framework provided by the Canadian Team, also published in the *Long-Term Preservation of Authentic Electronic Records*, and available at the same URL.

Any records preservation policy, strategy, or standard should:

Principle	Criteria
<p>1. address records specifically rather than digital objects generally; that is, it should address documents made or received and set aside in the course of practical activity.</p>	<p>A record is distinguished from other digital objects by virtue of the fact that it possesses a fixed documentary form, a stable content, an archival bond with other records, and an identifiable context. It participates in or supports an action and at least three persons are involved in its creation (i.e., an author, a writer, and an addressee)</p>
<p>2. focus on authentic electronic records.</p>	<p>An authentic electronic record is one that is what it claims to be and that is free from tampering or corruption. Accordingly, proving the authenticity of an electronic record involves establishing its identity and demonstrating its integrity.</p>
<p>3. recognize and provide for the fact that authenticity is most at risk when records are transmitted across space (i.e., when sent between persons, systems, or applications) or time (i.e., either when they are stored offline, or when the hardware or software used to process, communicate, or maintain them is upgraded or replaced).</p>	<p>Assertions that electronic records are more susceptible to tampering and corruption than traditional, hard-copy records need to be placed in context. While threats to the integrity of electronic records undoubtedly exist, digital information technology offers possibilities for very strong protection of their integrity. These possibilities are strongest within the confines of a specific system. When a record is taken out of a system, or when the system itself is modified, systematic control is at risk.</p>
<p>4. recognize that preservation of authentic electronic records is a continuous process that begins with the process of records creation and whose purpose is to transmit authentic records across time and space.</p>	<p>This process is defined as “chain of preservation,” that is, a system of controls that extends over the entire life cycle of records and ensures their identity and integrity in any action that affects the way the records are represented in storage or presented for use.</p>
<p>5. be based on the concept of trust in records keeping and record preservation and specifically on the concepts of a trusted record-keeping system and the role of the preserver as a trusted custodian.</p>	<p>Records should be made and maintained in a trusted record-keeping system and preserved by a trusted custodian. A trusted record-keeping system comprises the whole of the rules that control the creation, maintenance, and use of the records of the creator and that provide a circumstantial probability of the</p>

	<p>authenticity of the records within the system. To be considered a trusted custodian, the preserver must demonstrate that it has no reason to alter the preserved records or allow others to alter them, and is capable of implementing all of the baseline requirements.</p>
<p>6. be predicated on the understanding that it is not possible to preserve an electronic record as a stored physical object: it is only possible to preserve the ability to reproduce the record.</p>	<p>Reproducing an electronic record means to be able to render it with the content and any required elements of documentary form and annotations that such record possessed before reproduction.</p>
<p>7. recognize that the physical and intellectual components of an electronic record do not necessarily coincide and that the concept of digital component is distinct from the concept of element of documentary form.</p>	<p>A digital component is distinguished from an element of documentary form on the basis of the fact that a digital component is a digital object that contains all or part of the content of an electronic record, and/or data or metadata necessary to order, structure, or manifest the content, and that requires specific methods for preservation. In contrast, elements of form are those characteristics of a record that constitute its external appearance and convey the action in which it participates and the immediate context in which it was created</p>
<p>8. specify the requirements a copy of a record should satisfy to be considered equivalent to an original.</p>	<p>In principle, an original electronic record is the first complete and effective record. However, in an electronic environment, no original survives. Every faithful copy of such a record's content and of its documentary form is to be considered a copy in the form of the original, which is equivalent to the original as to its consequences. Any kind of copy that is declared authentic by an officer entrusted with such a responsibility is also equivalent to the original</p>
<p>9. integrate records appraisal in the continuous process of preservation.</p>	<p>Records should be selected for long-term preservation on the basis of their continuing value, assessment of their authenticity, and the feasibility of their preservation</p>
<p>10. integrate archival description in the continuous process of preservation.</p>	<p>Archival description should serve as a collective attestation of the authenticity of the records and their relationships in the</p>

	context of the fonds to which the records belong in conformance with the baseline requirements
11. explicitly state that the entire process of preservation must be thoroughly documented as a primary means for protecting and assessing authenticity over the long term.	To support the assertion of the authenticity of preserved electronic records, the preserver should document, at a minimum: the records creator's practices to support a presumption of authenticity, the processes of bringing the records into the archives and maintaining them over time, and the reproduction of records.
12. explicitly recognize that the traditional principle that all records relied upon in the usual and ordinary course of business can be presumed to be authentic needs to be supplemented in the case of electronic records by evidence that the records have not been inappropriately altered.	In addition to the evidence that they were created and used in the usual and ordinary course of business, records should be presumed authentic on the basis of the authenticity requirements or verified authentic by the preserver.
13. recognize that the preserver is concerned with both the assessment and the maintenance of the authenticity of electronic records. The assessment of the authenticity of electronic records takes place before records are transferred to the custody of the preserver as part of the process of appraisal, while the maintenance of the authenticity of copies of electronic records takes place once they have been transferred to the preserver's custody as part of the process of long-term preservation.	The assessment of the authenticity of electronic records should be based on authenticity requirements, while the maintenance of the authenticity of copies of electronic records should be based on sound archival practices.
14. draw a clear distinction between the preservation of the authenticity of records and the authentication of a record.	Authentication is a declaration of a record's authenticity at a specific moment in time by a juridical person entrusted with the authority to make such declaration. It takes the form of an authoritative statement, which may be in the form of words or symbols, that is added to or inserted in the record attesting that the record is authentic. Digital signatures—which identify the sender of a data object and verify that it has not been altered in transmission—can support the authentication of electronic records, but they are not sufficient to establish the

	identity and demonstrate the integrity of an electronic record over the long term
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The Canadian legislation (*National Archives of Canada Act, Access to Information Act, Privacy Act, Personal Information Protection and Electronic Documents Act*) provides a strong overall framework within which the InterPARES principles could be implemented. One minor caveat relates to the definition of “record” used in Canadian legislation, which does not associate records with the business processes they relate to, nor include the archival sense of “fixed documentary form”. However, Canadian archivists work with the traditional concept of record and consider an electronic record to be a document made or received and set aside in electronic form in the course of a practical activity and preserved in such form for action or for reference. This concept embeds the idea of fixity or stability in the choice of the term document over information. In addition, it considers to be electronic any record used electronically in the usual and ordinary course of affairs as opposed to one born digital but used in analog form.

The Government of Canada has policies on the *Management of Government Information*, the *Management of Information Technology*, and *Government Security*, and on *Record Keeping Metadata Requirements for the Government of Canada*. However, due to a gap between the framework established by these policies and actual practice in government offices, the federal government does not currently have an effective information management regime for its records. Initiatives are now underway to address this problem so that there can be general adherence to the principles enunciated in the InterPARES framework.

A technological context appropriate to the implementation of the InterPARES framework exists (i.e., the *Records, Documents and Information Management System* – an integrated suite of software available to all government departments and agencies), but needs to be more fully implemented across government. Separation between the Information Technology and the Information Management spheres within government institutions, which frequently leads to

Information Management considerations being inadequately reflected in Information Technology implementations, is another concern, even with a full implementation of the Records, Documents, and Information Management System.

Although the overall government context does not explicitly reflect a focus on records, as opposed to information in general, the electronic records and the appraisal policies of the National Archives of Canada do so. As it regards authenticity, the *Management of Government Information* policy reflects an awareness of the challenge to records' authenticity presented by electronic systems, while the National Archives methodology supports it explicitly in its procedures for appraising, transferring, processing, and preserving electronic records.

The principle that the preservation of authentic electronic records must be treated as an ongoing process that begins with records creation is reflected in the record-keeping guidance that the National Archives of Canada provides to the government, in the terms and conditions of transfer that govern the transfer of electronic records to the institution's custody, and in the National Archives internal procedures. As it regards a trusted record-keeping system, the *Records, Documents and Information Management System* adopted by the Canadian government respects such principle in theory. In practice, implementations may fall short of fully ensuring records' authenticity. This gap will be addressed in the coming years by increasing the National Archives involvement in information management across government. The National Archives, however, does fulfil in its practices the role of trusted custodian. It explicitly recognizes that electronic records cannot be preserved as stored physical objects, and focuses its preservation strategy on maintaining the ability to reproduce records in authentic form, while still accounting for the need to maintain the various physical carriers on which records are stored over time. Given its fundamental belief that good practices must be based on solid theory, the National Archives' methods derive from the acknowledgement of the difference between digital components and formal elements of a record, although such recognition is not explicitly stated in

its policies and strategies. They specify what systems must be used to transfer, store and maintain the record's digital components and to reproduce the record. These systems are selected once it has been demonstrated that they can be used to reproduce accurately both the content and documentary form of the record.

Preservation considerations play an important role in the National Archives' appraisal methodology and the information generated during the appraisal process will increasingly be reflected in archival descriptions as the institution's automated information systems become more closely integrated. The National Archives' adaptation of Chapter Nine of the Rules for Archival Description (the Canadian standard for archival description) calls for the integrated documentation of all appraisal, transfer and preservation practices. Thus, the principle that the chain of preservation must begin early in the life of the record is deeply embedded in Canadian archival practices.

The principle that proper evidence that the records have not been altered must exist to prove their authenticity is implicitly supported by the *Management of Government Information Policy* in its repeated emphasis that information must be maintained in a manner that preserves its authenticity. Similarly, there is no National Archives document on electronic records that explicitly states this, but it is certainly institutional practice to document the continuing authenticity of its electronic records over time. The National Archives assesses the authenticity of records before they are transferred; and maintenance of authenticity is a critical part of all preservation activities following transfer. As to the distinction between authenticity and authentication, it is not certain that it is well understood in government generally, but it is recognized by the National Archives, which has reflected it in its guidelines for records created in a Public Key Infrastructure environment.

Thus, it has to be recognised that, overall, there is a very good fit between the National Archives of Canada's approach to the management of electronic records and the principles and criteria of the InterPARES intellectual framework. At a more detailed level, however, it must be admitted that the National Archives

does implicitly or somewhat informally what such framework requires explicitly and formally, for example, the assessment of authenticity against authenticity requirements, and the determination of preservation feasibility at the level of record digital component. Nevertheless, there is no doubt that its archival practices are strongly grounded on theory and, probably because of this, are as effective as they can be at this moment in time, at least when compared to the practices of similar institutions worldwide. The facts that, on the one hand, the National Archives of Canada includes among its primary responsibilities nurturing research on the preservation of electronic records, actively participating in it, testing its findings, and disseminating the acquired knowledge and expertise among all Canadian archivists and archival institutions, and, on the other hand, the Canadian programs of archival education foster the interplay between theory and practice initiating theoretical research that involves practical testing, providing their students/future Canadian archivists with solid old theory and leading edge research experience and testing practice are the reasons why the Canadian approach to the management of electronic records tends to be consistent and systematic and to maintain a strong conceptual and methodological continuity over time. Merging the old with the new is an art that Canadian archivists are perfecting in the most unlikely area of endeavour, but, if it works, why argue with success?