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CUTTING EDGE

Digital records management

The lacking foundation for continuing accessibility

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Abstract

Purpose – The purpose of this paper is to present the findings of one of the 16 research teams of the third phase of the InterPARES (International Research on Permanent Authentic Records in Electronic Systems) project, that is, TEAM Canada. As with all other national teams, TEAM Canada aimed at building solutions for continuing accessibility of digital records in a variety of organizations.

Design/methodology/approach – All research teams, including TEAM Canada, utilized action research as their methodological framework.

Findings – The most significant finding of TEAM Canada is its discovery of the serious situation with the foundation of continuing accessibility of digital records, that is, the insufficiency of, or even the lack of, digital records management in organizations participating in the project.

Originality/value – The study described in the paper is unique for a number of reasons. First, it was guided by a theoretical framework featuring digital diplomatics, which concentrates the development of the InterPARES project of its 12-year investigation. Second, it observed the principle of open inquiry, which encouraged researchers to identify research design and methods according to suitability, not to any particular epistemological perspective. Third, a comparatively large number of organizations were studied.

Keywords Canada, Records management, Digital technology, Digital records management, Continuing accessibility, Diplomatic analysis, Action research, InterPARES

Paper type Research paper

Introduction

Digital records constitute a major part of our society's information production as they participate in all kinds of human activities. The function of records documenting activities gives rise to their unique characteristics, which, in turn, entail accommodating managerial measures for ensuring their trustworthiness and continuing accessibility, one of the fundamental goals of the records community. The digital world has imposed enormous challenges to the achievement of this goal. The InterPARES (International Research on Permanent Authentic Records in Electronic Systems) project has focused on the assurance of digital records quality since 1999 and has undergone three phases. This paper presents the findings of one of the research teams of the project's third phase, i.e. TEAM (Theoretical Elaboration into Archival Management) Canada of InterPARES 3, which, in parallel with another 15 country teams, aimed at applying new knowledge on digital records' long-term accessibility to practical settings (InterPARES 3, 2007-2012). Under the guidance of action research, TEAM Canada worked with testbed organizations to address their



continuing accessibility challenges. The paper concludes that the management of digital records in these testbed organizations largely failed to serve as the foundation of continuing accessibility of digital records, which, as a consequence, invalidated the functions of records as memory and evidence of the organizations' actions.

Theoretical framework

The guiding theoretical framework for TEAM Canada centres on digital diplomacy, a body of knowledge illustrating the nature and characteristics of digital records (Duranti and Thibodeau, 2006). As one type of digital information, digital records are digital entities created, used, and maintained by organizations in conducting business activities and for achieving results. When their ties with the business activities in which they participated are documented and maintained, i.e. managed, they are capable of functioning as memory and evidence of these activities. To document such ties, digital records need to be first identified among digital entities residing in the same digital environment where they operate for different business needs. To maintain such ties, pertinent tools and mechanisms are needed. The knowledge of digital diplomacy helped develop an analytical tool that TEAM Canada relied on to identify digital records and to guide the construction of maintenance mechanisms. The analytical tool, termed diplomatic analysis, assesses the record status of digital entities in five aspects or conditions:

- C1. Whether a digital entity possesses stable content and fixed form, and where it is affixed to a medium.
- C2. Whether it has participated in an action.
- C3. Where it expresses archival bond (defined as the network of relationships that each record has with the records belonging in the same records aggregation).
- C4. Whether it involves five people, i.e. author (defined as the physical or juridical person having the authority and capacity to issue the record or in whose name or by whose command the record has been issued), writer (defined as the person having the authority and capacity to articulate the content of the record), addressee (defined as the person(s) to whom the record is directed or for whom the record is intended), creator (defined as the physical or juridical person who makes, receives or accumulates records by reason of its mandate/mission, functions or activities and who generates the highest-level aggregation to which the records belong), and originator (defined as the person assigned or provided with the digital location where the record has been generated).
- C5. Whether its existence is in relation to five contexts, i.e. juridical-administrative (defined as the legal and regulatory environment in which the record's creator operates), provenancial (defined as the record's creator, its mandate, structure, and functions), procedural (defined as the business procedures in the course of which records are created, used, and maintained), documentary, and technological contexts (defined as the characteristics of the hardware, software, and other components of the digital system(s) in which records are created, used, and maintained) (InterPARES, 2007).

Research methodology

The methodological framework guiding the research work of TEAM Canada is action research. Action research pursues both fieldwork and academic research in a manner featuring participative and iterative courses (Greenwood and Levin, 2003; McNiff and Whitehead, 2006). It requires close collaboration and constant communication between the field and the researcher during the entire research process, i.e. from identifying issues or needs, to developing and testing proposed solutions, and to implementing and evaluating determined solutions. It is believed that such collaboration and communication would result in enhanced suitability and capability for the issues/challenges identified as needing solutions.

Findings and phase products

TEAM Canada has completed 14 studies proposed by testbed organizations. All proposals aimed at developing policies, procedures, and tools for assessing accessibility of digital records but each focused on a different type. The completed work can be categorised into foundation, mechanism, or technological system. The foundation category refers to the work that focused on aspects relating to digital records management, the mechanism category to the establishment of policies and procedures regarding assessing accessibility, and the technological system category to the design and testing of the functional requirements of such systems, including the metadata they require. The inclusion of metadata in the design of the technological system is due to the notion that metadata should be handled automatically by technologies as much as possible.

The most significant finding generated by these case studies is the strong need to lay a foundation, i.e. digital records management, for the testbed organizations. Among all participating organizations, only one demonstrated a sufficient level of digital records management for its objective (i.e. to build a technological system) to be achieved. The digital records designated for future access were managed systematically with an organization wide records management policy in place, an integrated records classification-retention system, and a digital records-keeping system capable of transferring appraised records and their metadata to a preservation and access system (Case Study 16). The research team was able to begin the development of a technological system without needing to first address foundation issues. The three testbed organizations who exhibited fewer issues relating to the foundation category were those whose records were created by individuals (i.e. artists, scholars, and members of the general public), the management of which was apparently less complex than that of organizational records. Seven testbed organizations explicitly included digital records management as part of their research proposals, due to difficulties of identifying and organising digital records recognised at the initiating stage of the project. The records of these organizations were typically in massive quantities and in dispersed repositories without systematic control over their creation, usage, or maintenance. Three others, while not explicitly including digital records management in their proposals, soon encountered issues relating to it that required solutions. For example the organization planning to maintain a web site for future accessibility needed to rely on digital records management to identify and capture the relationships between the various parts of the

web site and other groups of records as they all participated in the same activities, e.g. a student election (CS09). The relationships must be captured at both individual and unit levels in order for them to provide evidence of what happened in an authentic fashion. The situation was the same with the organization intending to provide continuous access to digital videos online, which needed traceable relationships with a series of other records in order for them to satisfy degree requirements and to be accessed by the general public via the internet (CS11). Thus all (except one) proposals dealing with organizational records required work on the foundation for future access.

The research work on the foundation consisted of first, the identification of digital records management issues and second, the development of pertinent solutions. Data collection included both those conducted in a systematic manner (i.e. utilising formal design) and instant communications among team members (e.g. e-mails, phone calls, and workshop discussions). During the first formal round of data collection (i.e. the collection of contextual information), the Team found out that 50 percent of the records creators did not have a basic records management programme (i.e. no organization-wide records management policy or integrated records classification-retention system), 80 percent of them did not include digital records as part of their records management policy or classification-retention system, and all except one did not have technological means capable of exercising systematic control for the life-management of their digital records. The finding that records management policies did not include digital records was in sharp contrast with the fact that the majority of informational entities used by these organizations were in digital format. This raised serious questions as to whether these entities are records. With the data collected through the second round (i.e. the collection of information specific to proposed research objectives), the diplomatic analyses found that none of the digital entities proposed for future access were able to satisfy the five conditions to a degree that firmly established their record status and that strongly supported the presumption of their authenticity, defined as the trustworthiness of a record as a record: i.e. the quality of a record that is what it purports to be and that is free from tampering or corruption (InterPARES 2, 2002-2007). All of them were stable in content and fixed in documentary form as they did not exist in an interactive or dynamic environment and were affixed to a medium (i.e. saved to a certain server) (C1). Although the web site possessed interactive and dynamic features, they were not intended for long-term maintenance and access. Instantiations of the web site were determined sufficient, and the collecting technology (i.e. periodic server crawling) stabilised them at the time of affixing them to a server other than the one used for production (hosting). They thus all satisfied the first condition for being records. The five people in the fourth condition (C4) were loosely identifiable because the creation of digital entities required system log-in and the created entities were saved to job-delimiting spaces on the shared drive provided by the organizations. The requirement of log-in was capable of attributing the (individual) writer to at least the log-in ID, if not the real person, and the delimiting of spaces based on job duties made the (unit) author and (unit) writer recognisable. The provision of the shared drive by the organizations made them the (organization) author, (organization) writer, and creator. Because the shared drives in all organizations were managed by in-house information technology units, they were the originators of the digital entities. Although the addressee could not be identified

collectively as the others were, the consultation of sampled individual records demonstrated their existence. The project found that the existence of the five people was the main reason that many employees used and trusted these entities as records, without questioning their authenticity. With regard to the second and third conditions (C2 and C3), the entities can be considered as participating in organizational activities as they were apparently not about personal matters. However the linking relationships between records, i.e. the archival bond, were problematic, because the expression of them was entirely dependent on the individuals who drafted the content of the entities rather than being captured in an activity-directed records classification scheme. The digital entities may be found in a folder named by the activity that gave rise to them, which demonstrated their archival bond, or in a folder named otherwise (e.g. meaningful only to the individual), which hid the archival bond. Reading the content of the entities or consulting the individuals who had direct knowledge about them was needed to make the hidden archival bond explicit. These efforts may yield no results if the content is insufficient for indicating the activity or if the individuals who possessed the needed knowledge became unavailable. The condition of archival bond therefore could only be satisfied partially.

The assessment of the five contexts in the fifth and last condition yielded varying results. The examinations of the juridical-administrative and provenancial contexts were straightforward because the data (e.g. the laws and regulations relevant to the organization and its business structures) were easily retrievable and interpretable, which permitted the assessment of the other three contexts. The assessment of documentary context was also satisfactory in terms of its existence in the organizations responsible for long-term accessibility. The results for the procedural and technological contexts, however, indicated deficiency. As established by the University of British Columbia project, the procedures of making records should be integrated with those of the related business activities to enable legitimate records creation and archival bond expression (Duranti *et al.*, 2002). In many of the participating organizations, however, the procedures of making records and even those of conducting business activities were not documented, and the documented ones were incomplete or outdated. In other words the ways of conducting business and making records were left to a large degree to employees or business units, as opposed to in accordance with written procedural rules designed for the organization as a whole. This explained the problematic situation of archival bond and the phenomenon that “corporate knowledge” in the form of human memory was very much valued in these organizations. The inadequacy or absence of procedures was also found with respect to recordkeeping procedures, e.g. those regarding how to prevent changes to records after creation. The protection of records authenticity thus solely relied on technologies; when technologies are limited as in some of the participating organizations, records authenticity was at risk. For most organizations, the digital entities were created using an office suite of software including e-mail applications, and were kept on shared drives or e-mail servers. These digital entities were protected simply by password, which allowed access to the recordmaking applications including e-mail accounts and to the servers that served as “recordkeeping repositories”. The authenticity of these entities was rarely questioned and was not a concern even though they could be easily modified or deleted by anyone who had the right to access the space designated for a

group where all digital entities created by the entire group were kept. The insufficiency of record-making and keeping rules compromised the value of records, creating challenges for the series of activities towards their continuing accessibility, including setting up retention schedules, conducting archival appraisal, and making disposition decisions. Without a disposition decision, the institutions responsible for future access to records would be unable to initiate any actions towards that goal.

The solutions TEAM Canada has so far generated include:

- organization-wide records management policy and procedures;
- records creation workflows;
- activity-directed records classification systems;
- records retention schedules;
- customised approaches for managing e-mails focusing on making explicit the archival bond;
- guidelines for retrospective records appraisal;
- recommendations for establishing a unit-type, full-ledged records management programme focusing on digital evidence; and
- recommendations for setting up a records management programme for a quasi-public organization.

These solutions addressed issues identified by the participating organizations as currently most needing attention; however they are only building blocks of a comprehensive records management programme. A comprehensive records management programme should possess the capability of exercising systematic control over all digital records produced by an organization. Only by such a programme can digital records of value warranting future access be managed with sufficient foundational work that enables the achievement of such a goal.

Conclusions

The situation of digital records management in the testbed organizations was unexpected given that the project aimed initially at mechanisms and technological systems for continuing access to records. The digital records management issues TEAM Canada encountered were in fact not entirely new, as many of them were first identified more than 20 years ago (United Nations, Advisory Committee for the Co-ordination of Information Systems, 1990), and they have ever since been studied by various research projects. A sizable body of knowledge has been generated covering basic digital records management, and with recent developments, advanced digital records management as well. However, as revealed by TEAM Canada, little of this body of knowledge appears to be applied to address the digital records management issues in the testbed organizations.

A comparative study of the literature and other organizations revealed further the unsatisfactory situation of digital records management, which is apparently not limited to the organizations TEAM Canada worked with. The participating organizations were characterised as small and medium sized, yet the comparative study included large-scale organizations such as federal agencies of Canada and the

USA. John MacDonald in Canada observed first the reality of unmanaged digital records in offices in 1995 and confirmed ten years later that the status remained almost unchanged (1995, 2005). The records management survey conducted by the National Archives and Records Administration regarding the US Federal Government found out that a very small number of individuals were given explicit or official responsibility for records management, and within that small group, many have additional or primary duties not directly related to an agency's records management programme. The senior officials in these agencies typically place a low priority on allocating resources for records management (NARA, 2010). Both the extensive existence of digital records management issues and the lingering status of these issues prompted the project to study organizational culture in relation to records management (General Study 07).

TEAM Canada is currently at the stage of consolidating its case studies, and will compare and synthesise its findings with those of other teams and those of the general studies conducted for InterPARES 3 as a whole. Final products will then be produced accordingly. The key note derived from the research at this stage is that the issues and challenges of digital records management cannot be addressed with complete satisfaction by one research project or during a limited time period. It requires a combined effort from the entire records community and a strategy endorsed by related information professions, who together envision and act towards the goal of providing continuing access to digital information that the current and future generations value and cherish.

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Further reading

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