
The Long-term Preservation of the Dynamic and Interactive Records of the Arts, Sciences and E-Government: InterPARES 2

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ABSTRACT: This article discusses the goal, objectives, structure and methodology of InterPARES 2, the second phase of an international multidisciplinary research project on the permanent preservation of the authenticity of electronic record, and presents the research conducted to date.

KEY WORDS: digital records, interactive records, dynamic records, preservation, authenticity, technological obsolescence.

1. The Problem

Ongoing technological change is causing widespread concern around the world regarding the preservation of the cultural heritage produced or stored using digital technologies. A portion of our society's documentary memory created and preserved digitally has already been compromised, and there are enormous costs associated with recovering electronic records that have become inaccessible. While the extent to which valuable digital information has been lost or has become retrievable only at great expense has yet to be adequately quantified, it is already apparent that the threat is real and widespread. Moreover, even if we could ensure the preservation of electronic records and overcome media fragility and technological obsolescence, preserved records are of little value unless we can be sure they are authentic, that is, that they can be trusted as sources. For centuries, our presumption of the authenticity of records has been premised on the presence or absence of visible formal elements such as seals and signatures and of controls on the procedures by which records are generated, transmitted, used and maintained, and on an uninterrupted line of legitimate custody. The use of digital technology to create records has reconfigured the traditional formal elements by which records were recognized as authentic, allowed for the bypassing of procedural controls, and made of physical custody an elusive concept.

If electronic records will ever be as trustworthy as records on traditional media, the practices by which they are created, maintained, and used must be analyzed, and strategies and standards for their authentic preservation must be developed. This was the mission of the first phase of InterPARES (International research on Permanent Authentic Records in Electronic Systems), a research endeavour that set out to deal with records mandated for accountability and administrative needs. In most countries, such records are the majority of those selected for permanent preservation, and constitute a high priority for both the public and the private sector. When in electronic form, they are usually created in databases and document management systems. The authenticity of these records on traditional media has been a concern of most juridical systems, which have explicitly stated requirements for their authenticity that could be used as a starting point for developing new requirements for their electronic counterparts. The creation, maintenance and use of these records are highly controlled, thus InterPARES 1 was able to focus on the preservation of the authenticity of records that are no longer needed by the creating body to fulfill its own mission or purposes, presuming their authenticity if they were created and maintained respecting specific requirements.¹

However, in the course of the research it became apparent that technological developments are beginning to interfere even with the procedures and forms prescribed for legal records, that decision making is increasingly based on records whose creation and form are discretionary, and that great concern is developing

1. The requirements developed by InterPARES 1 can be found on the project's website at http://www.interpares.org/book/interpares_book_k_app02.pdf

about preserving and verifying the authenticity of new record types that are more and more common worldwide. Previously, most electronic records produced in the course of administrative activities of any kind were textual, allowing for storage in a non-proprietary format (such as ASCII), and demanding a relatively unsophisticated software and hardware configuration for copies to be produced in a form close enough to the original. Increasingly, however, organizations and individuals have been generating records of a dynamic, experiential, or interactive nature, which will require different, and perhaps record-type specific, preservation strategies.

Dynamic documents depend for their content upon data extracted from databases which may have variable instantiations. The challenge they present to those who generate and use them as records is their lack of fixity, but more serious issues are raised by experiential and interactive documents. Clifford Lynch describes experiential digital objects as objects whose essence goes beyond the bits constituting them to incorporate the behaviour of the rendering system, or at least the interaction between the object and the rendering system. He also maintains that defining the authenticity of such objects is a much more complex problem than with raw data or traditional documents, because it is dependent not on the ability to reproduce a copy of the object's original bit-stream, but on the ability to recreate the environment in which that object was experienced, an activity that involves issues of privacy, copyright, etc.²

An interactive system is one in which each user entry causes a response from or an action by the system. To generate preservable records in such systems, we need to ascertain a) how user input affects the creation and form of electronic records (as is the case with much on-line commerce); and b) if and when the interactive system and its inherent functionality need to be preserved for those records to remain meaningful and authentic. Examples of interactive systems range from web pages delivering government services online to musical performances based on human-computer interaction to commercial video games.

Whether dynamic, experiential, and interactive digital objects are indeed records depends of course on their relationship to the activity of their creator. Cultural, scientific, and manufacturing industries have a long history of creating such objects in the course of their practical activities, and while the term "record" in the archival sense has not been typically applied to these objects within those sectors, clearly the professionals charged with the preservation of those archives may have to face the concrete challenge of preserving views of dynamic systems, maintaining the functionality of interactive records, and recreating the environment of experiential objects. It is important both to know to what extent the requirements, methods and strategies developed by the InterPARES 1 project to preserve authentic electronic records produced in databases and document management systems apply to these

2. Lynch, Clifford. "Experiential Documents and the Technologies of Remembrance." *I in the Sky: Visions of the Information Future*, edited by Alison Scammell. London: Library Association Publishing, 2000.

new situations, and to develop new ones where they do not. These issues are further compounded when individual creators lack the knowledge and tools to generate electronic records that can be preserved over the long term. InterPARES 1 research has indicated that record-making and record-keeping processes that have ensured the creation of reliable textual electronic records and the maintenance of their authenticity are likely inadequate for more complex record types of the kind just described.

This point can be illustrated by reflecting on the challenge mentioned above for ensuring the reliability and authenticity of records that lack a stable form and content. Ironically, the ease with which these records can be manipulated has given those who generate them, particularly in the creative and research sectors, a new reason for keeping them: ‘repurposing’. Makers and distributors of digital music and art works, as well as designers and architects, for example, often obscure the meaning and cultural value of their records by treating their form and content merely as digital data to be manipulated to generate new records, decontextualizing them from the activity by which they were produced. The potentially wide dissemination of repurposed documents threatens the authenticity of the original materials, as well as their authors’ moral rights. The records created in the course of scientific activities, while prone to more stringent record-keeping requirements, are also subject to the re-purposing of their content. For these reasons, it is necessary to develop an understanding of these new records not only in the later phases of their life cycle, but from the moment of their creation. In fact, it is probably necessary to revisit the concept of record itself, so that both the identification and the protection of these new types will be possible. We have to consider the possibility of substituting the characteristics of completeness, stability and fixity with the capacity of the system where the document resides to trace and preserve each change the record has undergone. And perhaps we may look at the record as existing in one of two modes, as an entity in becoming, when its process of creation is in course (even if such creation is ongoing), and as a fixed entity at any given time the record is used. There is no doubt that knowledge and strategies must be developed that are beneficial for both the creators and preservers of these complex new records.

Technological obsolescence, which poses a continual challenge to the accessibility, readability and intelligibility of electronic records, is of even more concern in the context of artistic and scientific activities than in that of administrative activities. Inadequate record-management practices have already precipitated the disappearance of many records pertaining to artworks that depended upon now obsolete software and hardware for their continued existence, including interactive musical materials, art works situated in virtual environments, and other performance works whose essential parameters were insufficiently documented to allow for their recreation. This has generated enormous difficulties for artists concerned with the long-term preservation of the unique and authoritative version of their work, requiring them to devote valuable time and resources to preservation

efforts³ and engendering an urgent demand for effective and tested strategies.

Many of the issues surrounding the management of electronic records in the arts and sciences are becoming relevant to government archives, as administrative bodies employ increasing complex multimedia systems in the creation of their records. In Canada, for example, the Government On-line initiative has mandated that most transactions between the government and its citizens be possible on the Internet by 2006. This raises considerable questions for the creation and management of the electronic records generated by such interaction, in part because the making of the record will no longer be the sole responsibility of the body having control of the electronic system (in this case, the government), but also of the user. Further, when the terms and conditions that govern the recorded transactions between government and citizens are articulated on web pages, those pages may need to be preserved with their functionality for purposes of accountability.

To meet these challenges requires an understanding of the nature of the new electronic records and record-creating processes in the creative and performing arts, in the social and physical sciences, and in the on-line interaction of citizens and government and of consumers and businesses. For our society to fulfill the legal, social and cultural imperative of preserving these records as authentic over the long term, research must be done into their characteristics and development, the requirements for their reliability, accuracy, and verifiable authenticity, and methods and strategies for their selection and preservation. To this end, the international team of researchers formed for InterPARES 1, together with additional researchers with discipline-specific knowledge, decided to initiate a second phase of its research, called InterPARES 2.

2. InterPARES 2: Intellectual Framework

InterPARES 2 began in 2002 and its completion is scheduled for the end of 2006. Its goal, objectives, structure and methodological principles have been articulated in an intellectual framework on which all co-investigators agreed.

2.1 *Research goal*

The goal of InterPARES 2 is to ensure that the portion of society's recorded memory that is digitally produced in interactive, dynamic and experiential systems in the course,

3. For example, internet artists Kit Galloway and Sherrie Rabinowitz have temporarily shut down their groundbreaking ecafe.com website for two years in an attempt to create an archive of their activities since they began the project in 1984. See <<http://www.ecafe.com/about.html>>.

and as a byproduct of, artistic, scientific and electronic government activities can be created in accurate and reliable form, and maintained and preserved in authentic form, both in the short and the long term, for the use of those who created it and of society at large, regardless of digital technology obsolescence and media fragility.

2.2 Research objectives

- To develop an understanding of interactive, dynamic and experiential systems and of the records produced and maintained in them, of their process of creation, and of their present and potential use in the artistic, scientific and government sectors;

- to formulate methods for ensuring that these records are generated and maintained by the creator in such a way that they can be trusted as to their content (that is, are accurate and reliable) and as records (that is, are authentic);

- to formulate methods for selecting among them those that have to be kept after they are no longer needed by the creator in the ordinary course of activity because of their legal, administrative, social or cultural value;

- to develop methods and strategies for keeping the records selected for continuing preservation in authentic form over the long term;

- to develop processes for analyzing and criteria for evaluating advanced technologies for the implementation of the methods listed above in ways that respect cultural diversity and pluralism; and

- to identify and/or develop specifications for policy, metadata, and automated tools necessary for the creation of an electronic infrastructure capable of supporting the creation of accurate and reliable, and the preservation of authentic digital records

2.3 Guiding methodological principles

2.3.1. Interdisciplinarity

The project is interdisciplinary in the measure in which its goal and objectives can only be achieved through the contribution of several disciplines and of all categories of stakeholders: individual record creators (scientists, artists, government bodies, corporations and industry), the information technology sector, the archival and conservation professions, etc. are involved in the formulation and selection of case studies, gathering of empirical evidence, and analysis. Such a mode of research ensures that the project's results will find ready acceptance within the targeted communities. The scholars conducting the research come from the following fields: Archival Science, Chemistry, Computer Engineering, Computer Science, Dance, Diplomats, Film, Geography, History, Information studies, Law, Library Science, Linguistics, Media Studies, Music, Performance Art, Photography and Theatre. The

countries actively involved in the project are: Canada, United States, Australia, Belgium, China, France, Ireland, Italy, Japan, Netherlands, Portugal, Singapore, Spain and the United Kingdom. The Advisory Board also includes an archivist from South Africa.

The research project has been structured according to the following matrix:

	FOCUS 1 Artistic activities	FOCUS 2 Scientific activities	FOCUS 3 Governmental activities
DOMAIN 1 Records creation & maintenance	Working Group 1.1	Working Group 1.2	Working Group 1.3
DOMAIN 2 Authenticity, accuracy & reliability	Working Group 2.1	Working Group 2.2	Working Group 2.3
DOMAIN 3 Methods of appraisal & preservation	Working Group 3.1	Working Group 3.2	Working Group 3.3
Terminology			
Policy			
Description			
Modeling			

Figure 1. *InterPARES 2 Project Matrix*

Each focus and each domain comprises three working groups that conduct research jointly as a Focus Task Force or a Domain Task Force. The cross-domains are composed of individual representatives of each Task Force conducting research jointly as Cross-Domain Research Teams. The purpose behind this complex structure is to enable the gathering of the relevant knowledge from each specific area of endeavour (focus), share it within each record related function (domain), and from this cross-fertilization build new knowledge which is applicable to all areas of endeavour and expressed in common terminology, models, descriptive schemas, and policies, strategies and standards (cross-domains). To maximize the outcomes of these dynamics, each research activity within each focus, domain or cross-domain is carried out according to the most appropriate methodology for that activity as identified by the specific team carrying it out. For examples, case studies are conducted in the context of each endeavour following the procedure that is more fruitful in each given case. Then, the results of the case studies are examined by different researchers using text analysis, diplomatic analysis, statistical analysis, etc.

2.3.2 Transferability

The ultimate goal of the project is archival in nature, in that it is concerned with the development of a trusted record making and keeping system⁴ and of a preservation system that ensures the authenticity of the records under examination over the long term. This implies that the work carried out throughout the project in the various disciplinary areas must be constantly translated in archival terms and linked to archival concepts, which are the foundation upon which the systems intended to protect the records are designed. However, upon completion of the research, the archival systems need to be made accessible and comprehensible to records creators, organizations and institutions and disciplinary researchers. In other words, the research outcomes must be translated back into the language and concepts of each discipline that need to make use of them. In light of the above, all researchers are committed to learning the key archival concepts that are identified by the archival scholars in the team as constituting the core of the InterPARES 2 research, so that each discipline can identify the corresponding entities within its own body of knowledge.

2.3.3. Open inquiry

InterPARES 1 had its epistemological roots in the humanities, specifically in diplomatics and archival science. In contrast, InterPARES 2, while planning as one part of its research to test some of the outcomes of InterPARES 1 in a range of applied settings, espouses no epistemological perspective or intellectual definitions *a priori*. Instead, researchers in each working group identify the perspective(s), research design, and methods that they believe to be most appropriate to their inquiry. The reason for this openness is that InterPARES 2 is conceived to work as a “layered knowledge” environment, in the sense that some of the research work will build upon knowledge developed in the course of InterPARES 1, some will take knowledge of similar issues developed in other areas of endeavour and bring it to bear on records creation and preservation, some will reconcile knowledge about records and their attributes, elements, characteristics, behaviour and qualities existing in various disciplines and develop it for archival purposes, and some will explore new issues and study entities never examined before and develop entirely new knowledge.

2.3.4. Multi-method design

As stated, each research activity is carried out using the methodology and the tools that the dedicated investigating team considers the most appropriate for it.

4. A trusted record making and 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 accuracy, reliability and authenticity of the records within the system.

Examples of the methods used are surveys, case studies, modeling, prototyping, diplomatic and archival analysis, and text analysis.

The research is guided by detailed research questions that specifically address the records creation process in each of the examined areas of endeavour, and the characteristics, structure and interrelationships of the resulting records; the issues related to the development of a chain of preservation for those records that begins with records creation and includes appraisal, description, and reproduction as authenticating procedures; the meaning of the concepts of accuracy, reliability and authenticity in the artistic, scientific and government related disciplines; the policies, strategies and standards in each area of activity covered by the research; the descriptive schemas necessary to the identification, use and preservation of the records of each activity throughout their life-cycle; and the models that more appropriately represent the digital material that is investigated and the processes of its creation, maintenance, use, selection and preservation.

3. Research Progress

The need to concentrate the initial part of the research on gathering an understanding of the process of records creation in interactive, dynamic and experiential digital environments has been especially encouraged and supported by the participant stakeholders. As a consequence, during the first thirty months of the project, the primary research activities have been conducted by the Focus Task Forces and the Cross-domain Research Teams, while the Domain Task Forces have conducted research aimed at supporting the study and analysis of the data gathered by the focuses.

The Focus Task Forces have carried out case studies and general studies. The case studies were identified according to the specific kind of activity that generated the records, and conducted by individual teams assembled in an interdisciplinary way for the purpose of investigating the entire life cycle of the records examined. Each team comprised at least a scholar of the activity under investigation, a technology expert, an archival scientist, and a student research assistant. Depending on the complexity of the case study, additional experts and students might belong in the team. The general studies were developed to address issues relevant to each of the three types of activities producing records, but not specific to any given case. Examples of the case studies undertaken are:

– The work of Arbo Cyber, Théâtre (?), a company whose artistic output involves performing arts, visual arts and media arts. Arbo has created over 20 performances, numerous laboratories and school workshops between 1985 and 2001. In an effort to preserve their work, members of Arbo are now seeking to digitize their artistic works. The case study team is interested in following the processes of digitization and transformation of the creative materials created by Arbo in the course of realizing its original productions.

– The work of Stelarc, a performance artist who frequently collaborates with computer programmers, technicians and scientists. His art is exhibited or performed in diverse environments including galleries, aerial suspensions and the Internet. The case study team is interested in learning where record creation begins and ends with Stelarc's art. In addition, the fragility of the environments in which the works are created and performed raises questions relating to issues of reliability and authenticity.

– Obsessed Again..., a work for bassoon and interactive electronics written in 1992 by Canadian composer, Keith Hamel. The work was designed to use commercial hardware and software but the required equipment is quickly becoming obsolete. The commissioner of the work has expressed a wish to reconstitute the work. The case study objectives include identifying both digital and non-digital documents associated with the work, articulating the requirements for musical authenticity based upon the documents, building a performable, authentic realization of the work, and developing a method for the future storage, retrieval, migration and access of the work.

– The Electronic Cafe Intentional (ECI), a multimedia international network for showcasing creative, multi-cultural, multi-disciplinary, collaborative telecommunications. This case study deals with a wide variety of media types that now pose the problems of aging and obsolescent formats. ECI's activities took place from the mid-1970s to the present, and incorporated experiences that were dynamic and interactive, which is the focus of InterPARES 2 research. This study highlights the problems posed by interactive, experiential, and dynamic records many years after they were initially created.

– The CyberCartographic Atlas of Antarctica, a research project that seeks to explore the new theoretical construct of CyberCartography, which sees the map as a new organizing mechanism for digital information. The dynamic, multi-dimensional, multisensory and multimedia Atlas will become an important scientific digital knowledge asset that will from its inception include archiving as an integral component of the project. The objectives of this case study are to explore the process of record creation, the function of the record within the activity in which it participates and to determine which of a record's features will allow its authenticity to be determined to ensure that it is kept intact over time.

– The Geographic Information System of the Centre of Desert Archaeology in Tucson, Arizona. This study investigates whether there are records in the system and if so, how they are created and maintained in a way that they can be considered accurate, reliable and authentic over time. The study also investigates how the perception of records is related to the concept of memory to archaeologists, the related (human) landscapes and descendants of the areas that are studied by archaeologists.

– The electronic engineering and manufacturing records which have been created in computer-assisted engineering, computer-assisted design and industrial automation systems. The focus of this case study is on examining the ability of complex engineering records to stand for the solid objects modeled in the records, and the ability of the manufacturing records to represent the processes required to produce such solid objects.

– Three online exhibits developed by the Archives of Ontario as a means to enhance access to its holdings. The research team is investigating the experiential and interactive records that emerge from the creation and posting of these exhibits, and the present and potential uses of these records within the government sector.

– The New York State's Department of Motor Vehicles online services. Users conduct legal and financial transactions within the website, which generates records in a networked and online environment. The DMV's highly interactive online system features a complex set of interwoven electronic activities.

– The computerized land registry in Alsace-Moselle, in France. Each entry requires the signature of a judge, using a PKI combining biometric access and digital signatures. The focus of this case study is on digital signatures within a dynamic information system designed to improve the efficiency of government-citizen relations in the context of the French civil law evidence system.

– The Revenue Commissioners of Ireland's Revenue On-line System which enables the generation, maintenance, access and preservation of electronic-based tax and other records in a secure and appropriate environment. The research team is examining the metadata models and standards used for information creation and exchange, issues of accuracy, authenticity and reliability as they relate to ensuring the integrity and confidentiality of information supplied by users, and research disposition and appraisal decisions for electronic records in a working environment.

– The Electronic Filing System of the Supreme Court of Singapore, an online filing system of records of civil matters which is meant to facilitate the process of civil litigation through e-filing and electronic information services, as well as to implement the use of electronic documents in electronic chambers or electronic courts. This case study subject allows the analysis of reliability and authenticity of e-government services in the courts within the context of Singapore's juridical system.

Examples of the general studies undertaken are:

– A survey of the record-keeping practices of composers, in order to gather data relating to the types of records that they produce, the composers' assumptions regarding the future access of their records, and the nature and variety of digital music systems they use. This will also shed light on how composers use the records they create, what their expectations are in terms of their future accessibility and how they ensure accessibility of their records over the long-term.

– The MUSTICA Initiative. The study team seeks to develop a typology of interactive digital music compositions, that will support discussion and analysis of the preservation needs of interactive, digital compositions by identifying the intellectual and physical components of the records of a variety of digital, interactive musical works

created by composers at the Institute de Recherche et Coordination Acoustique/Musique (IRCAM) and Groupe de Recherches Musicales (GRM) of Institut National de l'Audiovisuel (INA). This research is partially funded by France's Centre National de la Recherche Scientifique (CNRS).

– Persistent Archives Based on Data Grids. This study focuses on the San Diego Supercomputer Centre's project to develop a prototype for a persistent archives based upon data grid technology for the National Archives and Records Administration (NARA). This study examines the minimal capabilities needed within grid technology for preservation of governmental records, focusing on activities related to the preservation of NARA's selected digital holdings.

– A survey of the e-science literature for file formats and encoding languages that are used for non-textual scientific data, information and records. File formats and encoding languages are also analyzed to determine data, information and/or record structure and other properties related to the concepts of accuracy, reliability and authenticity of the digital objects in question. In addition, the study will determine equivalence classes of file formats and encoding languages and identify conversion tools that can be used for migration.

– A survey of state government websites within the United States. Eleven states were sampled starting from the most to least populated. The survey was limited to five departments within each state government. They were the departments of education, corrections, social and health services, environmental protection and ecology, and driver licensing. While the survey was not exhaustive, the survey findings will guide the work that is being done in the Department of Motor Vehicles case study, which is currently in progress. Also, the survey will serve as a companion product to a "Survey of Government Websites Interactivity: Australia, British Columbia, Canada, India, Ontario, and Singapore," which is in course.

While waiting for the results of the case studies, the Domain 2 Task Force, responsible for investigating the key concepts of accuracy, reliability and authenticity in the three focus areas, has produced annotated bibliographies and reviews of literature; an analysis of those concepts as discussed in the reviewed literature; and a bibliographic database for managing references in bibliographies and literature reviews. The knowledge so acquired will guide the analysis of the findings of the case studies and the development of the related preservation strategies.

The Modeling Cross-Domain has developed an activity model of the management of the chain of preservation, the related entity model, and a methodology for walking through the model using case studies data; is testing the model by walkthroughs of selected completed case studies; has begun the development of an activity model of preservation from the record creator viewpoint; has designed a protocol for representing in models the findings of case studies within the case study reporting framework; and is developing records creation activity and entity models of the completed case studies.

The Policy Cross-Domain has conducted literature reviews of existing policies, strategies, guidelines, standards and legislation for each focus group; has located

international instruments that have been developed on freedom of expression, moral rights, privacy, and national security, and examined how they have been or are being implemented individual countries; has developed a framework for the comparison of focus related policies and has begun comparing those of different sample countries; and has located relevant legislation and ethical codes, analyzing them in relation to the domains research questions.

The Description Cross-Domain has conducted a literature review across all focus area in order to identify authorities addressing the accuracy, reliability, authenticity and preservation of records by means of descriptive and other metadata schema and standards; has developed a database registering and describing salient features of relevant extant descriptive and other metadata schema and standards; has developed guidelines and provided training for researchers using the database; is populating the database; has established a metadata schema registry (developed specification, developed an XML-based DTD); has created the metadata schema registry database and populated with a pilot set and is beta testing it with standards identified by members of the scientific focus and artistic focus; and is studying the extent to which all metadata schemas and standards identified in the database and through the completed case studies address the research questions of the description cross-domain.

The Terminology Cross-Domain has developed a terminology database comprising a Register of Words and Phrases, a Glossary, a Dictionary and a Thesaurus; a procedure for building the Glossary of working terms resulting from the activities of each research unit, defining also its structure, form, and components; the core of the Glossary, which is however constantly in a process of growth and refinement; the structure of a dictionary that incorporates the official formal definitions contained in the most used and recognized dictionaries of each of the discipline involved in the project; and the core of the Dictionary, which is however constantly in a process of growth and refinement. It has developed the structure of a thesaurus that, for the duration of the project, will incorporate all the terms used in InterPARES 2 and their respective definitions in each of the disciplines or area of study ; and is developing the Thesaurus.

In support of all the research activities conducted by each unit, the team as a whole has developed several instruments: an intellectual framework that articulates the methodological principles that guide the project, for the purpose of directing the researchers into the research; the Project Organizational Policy; the Advisory Board Protocol; the model for a case study proposal, with related consent forms; sample questions that each interviewer should address in his/her case study; questions that each researcher conducting a case study must fully respond to at the conclusion of the case; the case study reporting framework; and a tool for comparing the findings of all case studies in light of domain research questions.

As well, the web site has been consistently used as a means of conducting research, in addition to dissemination. For example, the web site serves as an interface to several databases used in carrying out case study research, as an access point for surveys used in

general studies, and as the interface for accessing the various listservs used by researchers for exchanging information between workshops.

4. Conclusion

The InterPARES 2 Project has reached its mid-term. As shown by this report, it has already produced a large quantity of the material on the basis of which it will develop the project's deliverables, that is, among other things, guidelines for records creators outlining methods for the reliable production and maintenance of records that can be authentically preserved; prototypes of appraisal and preservation systems, and guidelines for records preservers; frameworks for developing policies, strategies and standards, and for the development of descriptive standards for the records under examination; registries of metadata schemas; and literature and terminology databases. However, as Project Director, I have to recognize that, regardless of its final deliverables, the most desirable outcome of this project has already been achieved: the harmonious collaboration of scholars and professionals from such a large variety of disciplines, backgrounds and cultures towards the long-term preservation of their digital culture is the invaluable product of InterPARES that I watch in awe and cherish every day as the work progresses.