

Stakeholder Analysis

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I. Introduction

In the United States today, electronic infrastructures for government, commerce, and research are being built that are predicated on records that are created and exchanged electronically. It is crucial, therefore, that systems and strategies exist for ensuring that these records remain accessible and trustworthy for as long as they are needed. Three constituencies have a major stake in addressing the development of such systems and strategies:

§ *Those who have already recognized the critical nature of this issue and are invested in addressing it, e.g., Federal funding agencies such as the National Historical Publications and Records Commission and the National Science Foundation; national institutions such as the National Archives and Records Administration and the Library of Congress, industry organizations such as the Collaborative Electronic Laboratory Notebook Systems Association (CENSA)*

§ *Those who can help to solve the challenges associated with the issue, e.g., technology researchers, software developers, policy developers, educators*

§ *Unwitting stakeholders—those who should be concerned but are as yet not fully aware of the scope of the issue, e.g., records creators and records user communities.*

The InterPARES Project Strategies Task Force Report outlines an intellectual framework for the articulation of international, national, and organizational policies, strategies, and standards for the long-term preservation of authentic electronic records. That report acknowledges that any policy, strategy, or standard is created within, and must be articulated in a manner suitable for a particular environment. In order to ensure that research outcomes such as those of InterPARES 1 have the best potential for influencing and guiding the stakeholder constituencies outlined above, it is key that archival requirements for authentic electronic records are framed within particular environmental constraints. This paper analyzes how the contexts, perspectives, and needs of some of the most significant U.S. stakeholder groups must be taken into consideration when research outcomes of projects such as InterPARES are translated into practice and policy. Because the U.S. recordkeeping and information policy contexts are very complex, and not yet fully defined, stakeholder relationships in this analysis were examined according to the scope of InterPARES 1 research, digital preservation research in general, and specific environments in which electronic records preservation might be implemented.

The stakeholder analysis examines eleven primary stakeholder groups: archivists, records managers, government, IT professionals, lawyers, for-profit sector, educators, librarians, artists, scientists, and research funding organizations. The stakeholder analysis also examines the potential interests of several other groups, including auditors, charitable and not-for-profit organizations, religious institutions, professional organizations, standards bodies, and the public. Finally, in light of this analysis, this paper examines how the theories and products of the

InterPARES Project will impact each group and considers how best to advocate for the preservation of electronic records to each group.

II. Analyzing Stakeholders

This stakeholder analysis is a structured examination of the InterPARES Project's interaction with and impact on various groups that can assist in gaining a better understanding of the specific groups that might benefit from individualized reports, publications, presentations, and tutorials of project outcomes.

Unfortunately, there is no standard approach to identifying and analyzing stakeholders. Stakeholder analysis often seeks only to identify some major stakeholders, using very general definitions of what a stakeholder might be. While the definition of a stakeholder as *anyone who can affect or be affected by an organization's actions* is commonly accepted, it is important to separate apparent stakeholders from actual stakeholders. Adopting a theory of stakeholder identification and salience from management literature, this Stakeholder Analysis identifies groups concerned with the long-term preservation of electronic records.^[1] Each group has been analyzed to determine why it is, or should be concerned about digital preservation. Each stakeholder group was then analyzed to determine its significance as a stakeholder in terms of *legitimacy*, *urgency*, and *power*:

Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions.

Urgency is the degree to which stakeholder claims call for immediate attention. A stakeholder group has an urgent interest in the research when its needs are of a time-sensitive nature, and when they are important or critical to its mission.

Power is the probability that one individual or group within a relationship is

in a position to carry out its own will despite resistance, bearing in mind that powerful stakeholders may be able to exert influence which will affect a project either negatively or positively. Power is the ability to control which decisions are made, and to facilitate the implementation of these decisions. Power may be coercive, based on the use of force or the threat of force; utilitarian, relying on material persuasion or incentives; or normative, involving more symbolic influence. When evaluating power, it is important to consider whether each stakeholder group has the resources—whether mental energy, time, expertise, or technology—to manage electronic records preservation.

Each stakeholder will have one or more of these qualities to varying degrees. In general, the more qualities, and the more of each quality, a group has, the more seriously its needs and interests should be considered. However, it is important to remember, for example, that a legitimate stakeholder with urgent interests may have no power to influence the project, while not every powerful stakeholder has a legitimate, urgent claim.

II.1. Primary Stakeholder Groups

The eleven primary stakeholder groups identified in this analysis are listed in order of the significance of each in terms of legitimacy, urgency, and power with respect to the electronic records preservation research of the InterPARES Project.

(a.) Archival Community

Perhaps the most obvious, and most prominently represented, stakeholder in electronic records preservation research is the archival community. There is little question that archivists as a profession are interested in preserving authentic electronic records, although some may not be able to conceive of even the first steps in the process. For some time, archivists have filled the audience of any

conference session addressing the problem of electronic records preservation, no matter how esoteric, in the hopes of learning just what to do with the digital media accumulated in their repositories. Archivists, therefore, are likely to be particularly interested in the work of the InterPARES Project because it is firmly grounded in archival theory and because it is applicable to archives of all sizes.

An examination of the archival community as a stakeholder in the InterPARES Project in terms of legitimacy, urgency, and power reveals that archivists have a legitimate, urgent interest in the project and its findings, while the issue of their power over electronic records preservation is more complex.

In keeping with their longstanding function of preserving organizational records and documenting organizational activity by preserving paper records, archivists have a legitimate need to preserve electronic records. This is particularly true as an increasing number of records, which formerly existed on paper, are created in electronic formats.

The problems that electronic records pose for archivists are urgent for several reasons. The longer archivists remain uninvolved in the creation of electronic records and their metadata, the more records will be created without regard for their eventual archival preservation and use. These records may be lost entirely as their storage media deteriorate, or as users delete files and discard hard drives. Even if the records do survive, they may be impossible to access due to the obsolescence of the hardware or software involved. Finally, even if electronic records do survive and can be accessed, their value and authenticity may be impossible to determine, since the metadata necessary to make these judgments may never have been created.

The issue of archivists' power as a stakeholder is more complex. Heavily represented on the InterPARES Project's research team, archivists potentially have a great deal of power to influence the findings of the project. However, outside of the project, there are questions about archivists' power to implement electronic records preservation programs. One aspect of preserving electronic records may be, for example, ensuring that records are created using software that

captures the information needed to assess their authenticity over time. This is problematic for two reasons. Most simply, archivists generally have little influence over systems design and infrastructure investment, with the result that archival needs are unlikely to be considered in these processes. More seriously, archival theory discourages archivists from influencing the records creation process, since one of the research strengths of records, as opposed to intentionally created documents, lies in their organic nature. Records grow out of the business process, created by an organization as a byproduct of fulfilling its mission. For this reason, archivists strive to avoid influencing the process by which records are created, since such interference would affect the processes they document. In the case of electronic records, however, archivists may need to participate earlier and more actively in records creation to ensure that the information necessary to maintain their authenticity over time is captured as they are created, used and altered. This raises the possibility that archivists will alter the processes that the records document.

The InterPARES Project is doing much to include the issues and interests of archivists. Working archivists and archival theory scholars take part in all facets of the research. Findings have been consistently presented to archival institutions and organizations throughout the entire project cycle. Comments and insight has been sought from archivists on many of the research products. In addition, several key findings greatly affect the manner in which archivists consider and deal with records. One of the most significant conclusions reached by the InterPARES Project is that electronic records cannot be preserved in the form of records, because they are stored in forms that, “substantially differ from those in which they can serve their intended purpose as records.”^[2] Instead of preserving electronic records, it is only possible to preserve digital components of electronic records in such a way that the preserver is able to reproduce authentic electronic copies of the records. In other words, while an electronic record is stored as a series of ones and zeros in the memory of a computer, it cannot be understood or used by humans in this form. Instead, these components must be preserved so that they can later be accurately translated into text, images, or sound, which humans can understand.

A second particularly important conclusion is the idea that while a record cannot exist until its elements are affixed to a medium, the medium itself is not an essential part of the record itself, but instead a part of the record's technological context.^[3] In practical terms, this means that electronic records may be copied from the medium on which they were originally created or stored to other, more stable media—just as archivists and others are already doing—without undermining their authenticity.

These two ideas have strong implications for the archival community. To the archivist, traditionally intent on the preservation of original records, this inability to preserve the original may prove troubling. The research of the InterPARES project will help to provide archivists with a framework in which to reconcile their electronic records preservation problems with their existing policies and practices.

(b.) Records Managers

The stakeholder group most related to and second only in importance to archivists is records managers. Records managers are charged with applying the systematic and scientific controls to recorded information required in the normal operation of an organization.^[4] In attending to this charge, these professionals seek to manage organizational information so that it is timely, accurate, complete, cost-effective, accessible, and useable. Traditionally, this group had focused its attention primarily on document-based information, mostly in paper, as opposed to data systems that are the purview of IT professionals. This group is normally differentiated from archivists because it concerns itself with the active stages of the records life cycle and it focuses on fulfilling legal and financial requirements, rather than preserving inactive records for reasons of historical and social value.

Records managers have a legitimate interest in any electronic records research that is undertaken or any program that may be implemented. As a group, they are understood to be acting responsibly on behalf of their organizations. Like the concerns of archivists, records managers' concerns are urgent because the longer the problem of electronic records preservation remains unaddressed, the more records will be lost. In addition, the group's concerns with profitability heighten the urgency of their interests. Like archivists, records managers have limited power to implement electronic records preservation. The position of records managers and archivists within organizations may not afford the influence necessary to implement change. However, in some ways records managers may have the potential to exert greater power over electronic records preservation than archivists. Unlike archivists, records managers are charged with caring for active records. As a result, they may work with records creators to influence the creation process. At the same time, their important role in managing active records for greater profitability has the potential (depending on the organization) to increase their role in systems design and infrastructure investment decisions.

Several findings of the InterPARES Project are particularly significant to this stakeholder group given the interest records managers have in electronic records and information systems. Foremost among these findings is the idea that electronic preservation must begin while the record-keeping system is active and continue throughout the records' lifecycle. This idea is a cornerstone of records management thinking. According to ARMA International, "information professionals must understand and effectively manage information from its conception."^[5]

The project has not specifically targeted the American records management community, a point made by outside observers of the project. While two members of the U.S. team do have secondary records management responsibilities and a

few presentations have been made to appropriate professional groups, this is not an audience that has been primarily targeted.

(c.) Government

Governments care about the long-term preservation of electronic records because they have witnessed the consequences of ignoring this issue. The United States has lost valuable census records because of media fragility and system obsolescence. The German Federal Archives have lost access to electronic records from the former East Germany. In both cases, the computer files themselves were saved, but lack of system documentation, unknown software codes, obsolete and inoperable media have made the files inaccessible. ^[6]

More than almost any other stakeholder, government has a legitimate reason to be interested in digital preservation research. Governments have always been meticulous recorders of information, which allows them to govern their citizens properly. In a democratic society, these records also protect the rights of the individual and help hold the government accountable for its actions. These protections hold true for all levels of government and for electronic records as well as for paper records.

As a stakeholder, government has an urgent interest in electronic records preservation in general, and in the InterPARES Project in particular. The U.S. government has been producing electronic records for many years, and for many years has been attempting to preserve these records. Regional, state, provincial, and municipal governments have generally lagged behind the federal government—both in producing electronic records and in their efforts to preserve them—but by now, electronic records are produced, if not preserved, at almost all levels of government. The problem of electronic preservation faced by government must be solved, if vital records are to remain intact.

Different levels of government have varying degrees of power to control the work of the InterPARES Project and other electronic records preservation research.

Government has coercive power, and may enact laws that alter the electronic records preservation landscape, requiring organizations and individuals to act in different ways. In the United States, appointed federal policy makers and key staff wield most of this power, although these individuals can be greatly influenced by elected officials and are bound by the rulings of judicial officials. The U.S. federal government also holds normative power, since American archival institutions are strongly influenced by the practices of the national archives. However, government may have limited ability to implement electronic records preservation. Government budgets are often stretched, when compared with the private sector. The necessary infrastructure can be costly and when the technology industry is not slumping, it may be difficult to recruit qualified technology professionals who are attracted to high-paying jobs in the private sector. The U.S. government's ability to finance preservation will be based largely upon how legislators perceive the urgency of this problem.

Government interests are well represented in the InterPARES Project. Each country participating in the research has a representative from the national archives. Several of the case studies, as part of the Authenticity Task Force research, were undertaken with government agencies at the national, state, provincial, and municipal levels. In addition, the research emphasis of a few American researchers and members of the American advisory committee is on government and technology. Presentations have been made to groups of government professionals, explaining and expounding the findings and ideas of the project. All of these efforts have been undertaken primarily with national government archivists, building upon existing relationships with members of the research team. In effect, this effort may be wasted "preaching to the choir," as many of those government archivists already understand and value the research. There has been much less consideration of the members of this stakeholder group that have less power to implement electronic records preservation. To remedy this, the project should also work with archivists from provincial, state, and municipal government levels. In addition, the perspectives of elected officials, policy makers, and lawmakers should be considered along with government archivists and technology professionals.

(d.) IT Professionals

Some have predicted the eventual elimination of the role of archivists and records managers in long-term preservation of electronic records, with the preservation function left to information technology professionals. The theory is that the decentralization of business may lead to a decentralized information technology structure that emphasizes the desktop. It will be on this desktop that hardware and software will handle the preservation function automatically, without the guidance of an archivist or records manager.^[7] Whether or not they replace archivists and records managers entirely, IT professionals will be significantly involved in digital preservation. This group includes IT professionals that work as part of other stakeholder groups, like governments, educational institutions, for-profit businesses, etc.

The duty to oversee all facets of computer systems development, implementation, and maintenance makes IT organizations legitimate stakeholders in the research of the InterPARES Project. IT professionals are potential stakeholders. They should be concerned about electronic records preservation. However, IT professionals have a day-to-day, almost shortsighted view regarding the protection of digital assets. They see the issue of preservation as simply solved through protection from daily data loss and corruption, and through proper understanding of current technologies. Many may not be able to comprehend a preservation term longer than five to seven years (an eternity in IT circles, yet just a blink in archival time considerations). In addition, there is some question whether IT professionals fully understand, “the value of records, the standards required to maintain reliable records, and [hold a] greater appreciation of record-keeping requirements.”^[8] Because IT professionals are designing and implementing new systems everyday that are not able to preserve authentic electronic records, the need to educate them regarding their role in the preservation of electronic records is urgent. This is particularly true because designing compliant systems will take much time and effort, and so requires immediate attention.

IT professionals are perhaps the most powerful stakeholders of electronic records preservation. This group was responsible for designing, implementing, and maintaining the past and present electronic systems that pose problems for long-term preservation. They will likely also be responsible for the future systems that will attempt to address the problems. In addition, in many organizations, IT departments wield a great deal of clout. They control large budgets and operate with a high degree of autonomy. Most important, IT departments operate with an aura of special knowledge that makes their decisions very difficult to challenge. All these concerns make it especially important that InterPARES outcomes are communicated effectively to IT community stakeholders.

(e.) Legal Community

Although recent statutory and case law clearly demonstrate that electronic records may be admitted as evidence in legal proceedings, there are still clear concerns about conditions under which electronic records may be deemed admissible in terms of their completeness, reliability, and continued authenticity. It is no longer an issue that electronic records are considered and collected as evidence. The legal community, therefore, has a legitimate interest in the development and implementation of electronic records preservation practices. The primary limit of this legitimacy results from the fact that the legal community is not ultimately responsible for the appropriate handling of electronic records.

Electronic evidence is typically collected in the discovery phase, and is subject to the same processes as other evidence. However, the legal community has relatively little experience and few precedents to guide the handling of electronic records as evidence. Challenges to electronic evidence have focused more on reliability than on authenticity. Legal rules of evidence have shifted from emphasizing evidential quality of the original record to demonstrating the integrity of the system. This has led to the development of computer systems capable of demonstrating system integrity through technological means. However, these technological authentication processes actually describe system reliability, rather than records authenticity. To establish authenticity, it may be necessary to evaluate the larger context within which the records were created.

The continued value of electronic records as evidence is contingent upon the development of a vocabulary describing coherent electronic records preservation and authenticity practices.

Moreover, the legal community has an urgent need for the implementation of coherent policies to guide the preservation of authentic electronic records. As society becomes more reliant upon the documentation provided by electronic records, the need for a clear legal context will increase dramatically. However, since legal procedure addresses problems as they arise (i.e. via appeal and decision by an adjudicatory body), the problems associated with the preservation of authentic electronic records may not appear urgent until a conflict arises.

The legal community has substantial power to influence the implementation of electronic records preservation policies. The practice of law is integral to the functions of every level of American society. It is likely that a powerful stakeholder, such as the federal government, would not exert its power to influence the development electronic records preservation policies without the consultation and consideration of the legal community. Furthermore, the statutory and regulatory requirements that dictate the handling of electronic records will emerge from legislative bodies that are inextricably linked to the legal community.

The legal community may be particularly concerned with how the InterPARES Project handles the issue of authenticity, as opposed to system integrity, as system integrity and record authenticity are further distinguishable with increasing use of electronic evidence. Originality, in reference to the finding that preservers cannot preserve original electronic records but can preserve the ability to reproduce authentic copies, should not present problems for the legal community as long as (1) the evidential quality of the records is maintained in the reproduction; and (2) the reproduction includes all the elements set forth in the guidelines for authenticity.

Diplomatic analysis includes the analysis of records within their legal context. The work of the InterPARES Project has, from its conception, been closely

associated with the concerns of the legal community. Two researchers added to the American team have provided important legal perspectives on the research as it occurred.

(f.) For-Profit Sector

Members of this broad group also include professionals represented in several other stakeholder groups listed in this report, including records-managers, IT professionals, lawyers, scientists, and auditors. This group is differentiated from all of these separate subordinate groups and is categorized based on its organizational similarities and profit motives. While the for-profit sector is not an active participant in the research of the InterPARES Project, industry will be a significant player in any attempt to implement long-term electronic records preservation, making the group a potential stakeholder. As soon as businesses fully understand that an inability to preserve electronic records will cost them money, they will begin to pay much more attention to the subject. While almost all industries already deal with digital information or electronic records in some form, certain types of industries will be more concerned with the research than others.

Of the ten major industry categories listed by the U.S. Census, five industry categories are significant potential stakeholders. These include: manufacturing; information; professional, technical, and scientific services; banking, finance and insurance, and arts, entertainment and recreation.

Of these, the manufacturing sector, which includes chemical, pharmaceutical, and consumer packaged goods, food and beverage, oil and gas, and computer technology manufacturing, is the most concerned with preserving authentic records in electronic systems. ^[9] This sector focuses on protecting intellectual property records electronically. In the past, patent and trademark documentation requirements have been fulfilled with inefficient paper notebooks. The ability to create, maintain, and preserve these records in electronic form is very important

to this industry sector.

The information industries are primarily engaged in the following processes: producing and distributing information products; providing the means to transmit or distribute these products along with data or communications; and processing data. This group includes publishing, telecommunications, and broadcasting establishments.^[10] This sector has obvious reasons to be concerned about digital preservation. Its issues include copyright protection and access to information. This group must be able to successfully deal with the conflict between new technologies that allow content assets to be manipulated for active output to users and the need to protect its intellectual assets.

The professional, scientific, and technical services sector comprises establishments that specialize in performing professional, scientific, and technical activities for others. These activities require a high degree of expertise and training. The establishments in this sector specialize according to expertise and provide these services to clients in a variety of industries and, in some cases, to households. Activities performed include: legal advice and representation; accounting, bookkeeping, and payroll services; architectural, engineering, and specialized design services; computer services; consulting services; research services; advertising services; photographic services; translation and interpretation services; veterinary services; and other professional, scientific, and technical services.^[11]

The finance and insurance sector comprises establishments primarily engaged in financial transactions (transactions involving the creation, liquidation, or change in ownership of financial assets) and/or in facilitating financial transactions.^[12] This sector has obvious concerns for electronic record-keeping and preservation. The work of the Italian team was partially funded by businesses from this sector. Banks were studied as case studies as well as transactional databases from the Securities and Exchange Commission. More than any other sector, this group may be most willing to settle on standards because they don't normally have a financial stake in any particular side, but only an interest in the

success of any standard that eases financial transactions.

The arts, entertainment, and recreation sector includes a wide range of establishments that operate facilities or provide services to meet the varied cultural, entertainment, and recreational interests of their patrons. This sector comprises (1) establishments that are involved in producing, promoting, or participating in live performances, events, or exhibits intended for public viewing; (2) establishments that preserve and exhibit objects and sites of historical, cultural, or educational interest; and (3) establishments that operate facilities or provide services that enable patrons to participate in recreational activities or pursue amusement, hobby, and leisure time interests.^[13]

The motives of any for-profit business must be questioned before its concerns are considered to be legitimate. Businesses are always seeking to benefit from research, perhaps at the detriment of someone else. That said, the U.S. market-driven economy encourages businesses to seek independently for solutions to problems like electronic records preservation that allow for open competition. While it may be possible for the government or some open-source public research group to postulate theories or attempt to implement programs for preservation of electronic records, for-profit industry holds the most power of any real or potential stakeholder. This may be because industry is quick to react to problems while governments and large cooperative organizations are notoriously ponderous. They are slow to get started and once they choose a direction, are likely to continue in that direction long after everyone else has chosen a different direction.

Three of the five most significant for-profit industries (1. arts, entertainment & recreation; 2. professional, technical & scientific services; and 3. finance and insurance) were represented by Authenticity Task Force case studies.

Representatives of the Collaborative Electronic Notebook Systems Association, an international industry association focused on driving the state of the art for electronic record-keeping systems and collaborative technologies wherever they are used, represent manufacturing industries on the International team.^[14] This

connection to industry might be strengthened by allowing industry to voice more of their interests and concerns.

(g.) Educational Community

Educational organizations are potential stakeholders of the InterPARES Project research and electronic records preservation. For the most part, K-12 educational institutions have not yet implemented records information management programs. There are barriers to such programs. Control of records tends to be decentralized. Records and information management is rarely recognized as a priority by district administrators. There is no person, real or juridical, who holds authority over the retention function. Few district staff members are familiar with the legal requirements for records retention and protection, and many lack the necessary technological skills. And finally, there is no auditing process in place, with the result that existing record-keeping systems are rarely evaluated.^[15] While these institutions have not yet implemented records and information management programs, they do create and maintain important records, both administrative (including board minutes or budgets) and academic (including grades and student files). Schools are responsible for preserving documentation to support student records, which are filed with state governments. These records are used in calculating state funding for the district and the school. If they are not currently created in electronic form, they soon will be. It will be the responsibility of the educational community to ensure that their records are preserved properly.

When compared with the K-12 institutions, post-secondary educational institutions have a much better understanding of the importance of proper record-keeping. University registrars are the single professional group that is most concerned with universities' records. Nearly all registrars deal with records in electronic form. However, many registrars continue to have paper fetishes, placing all symbolic power on watermarked, signed, and sealed paper documents. Many currently seem to lack both the expertise and the inclination to implement electronic records preservation.

Federal, regional, and local laws give educational institutions the responsibility for documenting certain aspects of their own organizations and of their student populations. Unless there is some reason to doubt institutions' motives, it is assumed that they are acting appropriately, balancing the interests of governments, the students, the students' parents, and the community, as well as their own.

The claims of this stakeholder group require immediate attention. Educational institutions are already having difficulties preserving their electronic records. This problem will only become more serious as the systems used become more complex. Universities invest great sums of money into complex integrated database systems that include student records subsystems, in addition to subsystems that serve other functions of the university. These purchasing decisions are being made without the advice of archivists or records managers, with the result that the new systems often do not allow for the preservation of the records they contain. In many cases, records in these systems may never be truly set aside or made unchangeable. There may be no way to dispose of records, and it may be impossible to link the elements of the systems context to the records as contextual metadata.

In spite of the magnitude of their electronic records problem, educational institutions often have limited power to implement the research ideas of the InterPARES Project. Particularly in primary and secondary educational institutions, budget constraints, limited IT knowledge and support, as well as a lack of records and information management knowledge all hinder such attempts. K-12 educational institutions have little power to affect research because few of their educators or records and information management professionals are participating in electronic records preservation research. On the other hand, there are university records and information management professionals taking part in research. The Indiana University Electronic Records Project^[16] and the Cornell Project 2000^[17] are two prime examples. In each of these projects, university professionals have joined researchers to test electronic records preservation theories. This not only adds to the research being undertaken, but also more

significantly contributes to the expertise of this segment of the stakeholder group and its ability to implement preservation programs.

As stated above, the complex integrated databases that many universities are currently using or developing do not meet standards set by the InterPARES Project. Most significantly, these databases were not designed to serve as record-keeping systems, but rather for the display of current data and information. The systems often lack even the most basic necessity of a record-keeping system, the ability to be closed and set aside. InterPARES's findings require that such systems copy and set transaction logs and data tables aside away from the active system at the end of a standard term, and make them available with read-only capacities. The Authenticity Task Force's Requirements for Assessing the Authenticity of Electronic Records^[18] also affects university database systems. Requirement A1 states that the attributes of records concerning the identity and integrity of the records should be expressed explicitly and linked to the records in some way. University systems normally do not express the name of the author, writer, or addressee explicitly, instead tracking only the dates of creation and transmission. All other identifying information is implicit in the greater organizational context within which the system operates. The same concerns hold true for K-12 institutions.

InterPARES is not successfully addressing the interests of this stakeholder group, although some potential exists to address the needs of post-secondary educational institutions. There is only one member of the InterPARES team who is involved in educational records or information administration. This member's primary role is university archivist, with minimal influence over the records creation process. However, the Authenticity Task Force studied student records systems from four different countries extensively and one of the doctoral students from the US team is considering these systems in her dissertation. InterPARES has not considered the concerns or needs of the K-12 educational community. There are no researchers representing this group and systems of this type have not been examined.

(h.) Librarians and the Digital Library Community

A particularly controversial stakeholder group is the library and digital library community. Both archivists and librarians are information professionals and share a commitment to organize their collections properly and make them available for use. Librarians do not primarily deal with organic records, but instead with documents that have been created from conspicuous acts of intellectual creation.^[19] Similarities in the form, format, and descriptive standards of traditional paper-based library holdings have led to the great differences in the ways libraries and archives collect, assess, arrange, classify, describe, store, and provide access to their collections. The proliferation of electronic information that must now be preserved has blurred the distinction between the digital archivist and the digital librarian. The result has been great confusion regarding the mission and role of either and a confusing cross-fertilization of common terms that are used differently by each group. It is most important to note the difference between records, as described by the InterPARES Project, and the type of material held by librarians.

Librarians are interested in increasing access to digital objects, sometimes to the detriment of *respect de fonds*, provenance, or original order concerns of archival collections. It is an obligation inherent in library preservation, that, “preservation of resources shall not come at the expense of usability.”^[20] As Steve Chapman said at the 2001 OCLC pre-conference symposium to ALA, preservation strategies strive to manage both technological compatibility and user expectations.^[21]

Like archivists, librarians have limited power to influence the implementation of electronic records preservation policies. Although librarians are potentially powerful allies for archivists attempting to influence electronic records preservation, lack of consensus regarding the nature of electronic records and their relationship to digital library materials precludes effective cooperation between the library and archival communities. Out of necessity, libraries are focusing their power on implementing preservation strategies without the

consensus of the broader community of information professionals. The result is a problem of vocabulary and usage of common terms. Outsiders may be unable to understand the difference between digital library archiving projects and electronic records preservation projects even if their missions and goals are entirely different. In a collaborative capacity, libraries and archival repositories together could wield significant power on this issue. Instead, digital library and archiving research projects are competing with electronic records preservation research projects. This ability to curb the potential funding of electronic records preservation research projects increases the power of this stakeholder and means that InterPARES must consider their interests.

The InterPARES Project's conclusion that it is not possible to preserve an original record is a significant consideration for digital libraries. Traditionally, libraries have described, accessed, and manipulated their resources using the "holding" or "item" as the fundamental unit. The conclusion that the preserver cannot preserve the original, but rather can only preserve the ability to reproduce an authentic copy, does not conform to the typical library holdings model. Libraries are accustomed to dealing with items that are constant, collocated, and directly associated with a document surrogate. The assertion that preservation is not complete until an item has been reproduced is problematic for this model, which presumes the latent presence of an identifiable item. This problem is already evident with the difficulties that exist attempting to catalogue web pages, digital image collections, and other computer files using traditional library cataloging methods.

Libraries need to ensure the accuracy and reliability of their electronic resources. However, authenticity is not a concern expressed by librarians. Although the requirements for authenticity focus on formal aspects of records, libraries may adapt these guidelines to make them relevant to their particular institutional context. The identification of formal elements of electronic holdings may facilitate the establishment of benchmarking procedures with which libraries may monitor the authenticity of their resources.

The concerns of librarians and the digital library community are represented in

the InterPARES Project by two electronic resources librarians and one scholar specializing in library preservation. However, InterPARES has not yet fully considered some of the most important implications of digital preservation to librarians: privacy, intellectual property, access, legal liability, and costs. Digital library representation will be increased for the U.S. team of InterPARES 2 by the addition of digital library scholars. The archival perspective has been presented to librarians at conferences of the Council of Federal Libraries and the Association for Library and Information Science Education. Digital preservation was discussed with the Council on Library and Information Resources as part of the Preservation Task Force's survey of preservation strategies for electronic records. Some further work with this stakeholder group could be very beneficial, both in gaining support of a powerful ally, but also to help in controlling a group that could pose problems to electronic records preservation research if it alters terminology and garners further support.

(i.) Cultural and Artistic Institutions

Society preserves its memory in its art, architecture and in its books. Cultural and artistic institutions have created a wealth of unique materials in electronic media. Now these institutions are faced with the prospect of the loss of cultural and artistic memory because of the lack of clear preservation policies and practices aimed at preserving electronic records in visual, aural, and multimedia formats. Without a clear strategy for the preservation of authentic copies of these works, the retention of an authentic and accurate evidence of this work is endangered.

It is difficult to assess the legitimacy and urgency of cultural and artistic institutions. It is difficult to determine if there are records in a collection of artistic or literary works. Records are unique documents that participate or result in an action. They are produced by individuals or organizations as a natural by-product of their activities, and constitute the primary source of knowledge about those activities. This definition can't easily be applied to artistic or literary works. Also, newer forms of digital art do not necessarily have set meaning as conspicuous acts of intellectual creation. Interactive, experiential, and dynamic digital art works may or may not be records. This largely depends on the

relationship of the works to the activity of their creator. Whatever the answer, this report is not the place to answer the question and much future research must be undertaken on the subject.

Just like any other organization, cultural and artistic institutions have an urgent need for the formulation and implementation of clear and flexible policies for the preservation of authentic electronic records. The loss of cultural memory is one of the most pressing issues faced by custodians of electronic records, and cultural and artistic records provide an irreplaceable source for historical insight.

Cultural and artistic institutions have significant but uneven power to influence the implementation of electronic records preservation policies. Since the definition of cultural and artistic institutions is so broad, organizations ranging from the National Endowment for the Arts and the Kennedy Center to small, local, grassroots organizations are all included, with the former group wielding much more power than the latter. National institutions are actively addressing the problem of preserving electronic art and music, though their interests may not adequately represent the diversity and breadth of material to be preserved. For-profit cultural and artistic institutions (such as film studios, music companies, and publishers) wield a great deal of influence over the implementation of electronic records preservation policies. However, many for-profit organizations have proceeded with their own initiatives.

The determination that it is impossible to preserve original records has potentially vast implications for preservers of cultural and artistic records. Traditionally, originality has been an extremely important component of artistic objects. The fixity of many types of artistic and cultural media has allowed originality to be closely associated with cultural and monetary value. The attempt to preserve authentic records in electronic formats will require preservers and artists to revisit the concept of originality as it relates to value. Artists themselves are beginning to question the connection between the work and its media carrier. Clearly distinct artistic disciplines previously categorized by medium and technique have blurred as computers have allowed for the interchangeability of information. A single work can now be represented in two or three dimensions, or even as a sound. [\[22\]](#)

The InterPARES Project has included the participation of archivists from museums like the Smithsonian Institution. Some of the issues facing the artistic community were considered in the Authenticity Task Force case studies. The preservation of cultural and artistic information created electronically will be a primary research concern for InterPARES 2. The researchers for this project will include a number of individuals from cultural and artistic institutions and case studies will examine the records of both individual artists and artistic institutions.

(j.) Scientific and Research Organizations

Scientific and research organizations are often large collaborations of researchers from other stakeholder groups, like educational institutions, government, and for-profit industry. This group is identified here because its members have common interests; they are subject to stringent records requirements; but also prone to repurposing their data content. This group is a potential stakeholder because scientific disciplines generally place relatively little importance on the long-term management of data, information and records. “Archiving” is often viewed as a process performed by someone other than the researcher, after the research itself has been completed. While this assumption has not caused significant problems for paper-based records, it is becoming increasingly problematic as more and more scientific records are created electronically. In many cases, new scientific documentation practices are needed to produce scientific records that may be preserved.

There are some questions about the legitimacy of scientific researchers’ involvement in electronic records preservation. Scientific researchers are more concerned with the preservation of data than of records. Researchers wish to be able to manipulate and examine old data in new ways. To do this, systems must be kept changeable and unstable, the opposite of InterPARES’ requirements for preservation of authentic electronic records. However, researchers must be able to verify that the information they now find in their electronic systems is the same information originally collected, necessitating authentication standards of some kind. At the same time, the preservation of the records of scientific activities is

also crucial to the protection of intellectual property rights, especially patents. Finally, the scientific community benefits from the ability to trace the evolution of scientific thought over time. For these purposes, authentic, accessible records are necessary. This kind of research, which has been only minimally addressed by the scientific community itself, is legitimately part of the InterPARES Project.

As with other stakeholder groups, the scientific community has an urgent interest in the research of the InterPARES project because the longer the problem of electronic records preservation is not addressed, the more records will be created which are impossible to preserve authentically. In some cases, data has already been lost which will be difficult or impossible to collect again.

The scientific community is often more highly funded than other stakeholder groups. As a consequence, its power is likely greater. Not only can this money be devoted directly to research, but also it makes the development of commercial products relying on InterPARES' findings more likely. Similarly, the scientific community is more likely to have (or be able to develop) the necessary technological skills to understand and implement the project's findings than almost any other group than IT professionals.

This stakeholder group was not a focus of the InterPARES research. The US team did include one scientist consultant who participated in the research and led a critical examination of the chemical make-up and longevity of electronic storage media. Internationally, plans of InterPARES 2 have included adding a focus task force specifically studying records of scientific activities.

(k.) Current and Potential Research Funding Organizations

This group primarily consists of organizations from other stakeholder groups, including government and non-profit organizations. Of the stakeholders having a direct relationship to the InterPARES Project, funding organizations are the most powerful. This group is identified here because it is one of the most powerful stakeholders with a direct relationship to the InterPARES Project. Both actual and potential funding organizations that have expressed an interest in electronic

records, digital preservation, digital libraries, digital archiving, or related functions are stakeholders of the InterPARES Project. These organizations include the National Historical Publications and Records Commission, the National Science Foundation, the Andrew Mellon Foundation, as well as several others. These organizations have different missions and goals, but all must consider the outcomes of the InterPARES Project and how the project affects funded programs and programs that may be funded in the future.

As the major funder of the American InterPARES team, the NHPRC is currently the only actual stakeholder from the potential stakeholders in this group. Its primary concerns are: whether the work of InterPARES fits within the electronic records program; and if InterPARES is meshing with the work of other NHPRC funded projects, such as the San Diego Supercomputing Center, the Indiana University Project, and the research of the Minnesota Historical Society. The goals of the NHPRC electronic records research program are outlined in *Research Issues in Electronic Records*. This publication stresses that the NHPRC is most concerned with what archivists need to know about electronic records and what barriers are preventing archivists from developing and implementing archival electronic records preservation programs. [\[23\]](#)

Funding organizations have legitimate interests in the InterPARES Project. Many operate as government agencies or nonprofit organizations that have been entrusted by the public to attend to their particular missions. As long as each administers its funds fairly and wisely, the organization's interest in the project is legitimate. There is no urgency for this stakeholder group, except that each may require potential researchers to work on a particular schedule or time frame, within funding cycles and by application deadlines.

These organizations have a great deal of power to influence the research that is undertaken. Each agency publishes guidelines detailing exactly what types of research potential applicants should consider. For example, the NHPRC's *Research Issues* describes the ideas which frame the electronic records research agenda and influence the types of electronic records research projects that the organization will fund. The NHPRC has the power to withhold funds if certain

tasks are not completed or proper research is not undertaken.

Both the U.S. team and the International team of the InterPARES Project have given much consideration to the concerns of the actual funding organizations. This may be because the funders require such communication. InterPARES has been under more scrutiny than other projects because it is so large and costly to funding sources. The project has submitted all required reports, made oral presentations to funding representatives, and one member the U.S. team spoke at a congressional reauthorization hearing for the NHPRC.

II.2. Other Stakeholder Groups

(a.) Auditors

According to the Institute of Internal Auditors, auditors are ‘business generalists’ who specialize in efficiency and effectiveness for the good of the organization and its shareholders. Their roles include monitoring, assessing and analyzing organizational risks and controls; and reviewing and confirming information and compliance with policies, procedures, and laws. Their education and areas of expertise vary widely. Auditors may have engineering, operations, finance, or information technology backgrounds. It is their job to address problems and improve efficiency. Auditors seek to evaluate and eliminate risks to the organization proactively. [\[24\]](#)

This group’s concern with risk avoidance and efficiency of communication and information technology makes this stakeholder group very similar to records managers. Both groups are primarily involved with active records and their primary concern with minimizing organizational risk can bring them into direct conflict with archivists. Auditors do not necessarily have an urgent interest in the research of the InterPARES Project. As a result, this group is better characterized as a potential stakeholder, often largely unaware of the problems that the inability to preserve authentic electronic records may pose to the efficiency and overall

financial stability of an organization. This group does hold significant power to hamper or affect the implementation of an electronic records program. Because auditors have direct relationships with upper corporate management, it is important that they be instructed on the importance of such programs.

Auditors are not a stakeholder group that the InterPARES Project has considered or included in its research. The opinion of such experts might be very beneficial to the project. The auditors' focus on upper management might serve to balance the Authenticity Task Force's focus on operational and knowledge level systems in its case studies, and ensure investigation of the management and strategic level systems that are most likely to generate key records relating to policy, procedural and organizational decision-making. [\[25\]](#)

(b.) Charitable and Non-Profit Organizations

The next two stakeholder groups are similar in a number of ways. Charitable and religious institutions often operate under non-profit status. This non-profit status means that they are subject to unique treatment with regard to taxation, employment, and investment. Strict government standards require that careful record keeping provide accountability and documentation of the organization's practices. These organizations are often managed by small, flat, de-centralized administrations. They depend on complex, integrated database programs to accomplish their goals. Many of these systems bring together data, information, and records created in a number of different systems. Flexible and adaptable systems are valued, while systems with properly set aside and authentic records are a necessity.

Charitable organizations have a legitimate need to ensure the authenticity and preservation of their documentation. However, monitoring organizations, such as government agencies, will ultimately use many of the records required of charitable organizations. Therefore, the legitimacy of the need for the implementation of electronic records preservation practices with regards to these documents will actually fall under the rubric of Government Agencies.

Charitable organizations have little urgency for the implementation of electronic records preservation policies. Though their need for preservation of their authentic electronic records is clear, the nature of nonprofit institutions demands that their power and urgency be directed at other issues, namely fundraising and solicitation. Since the most essential records fall under the domain of other stakeholders, their urgency is limited.

Charitable organizations have very limited power to influence the implementation of electronic records preservation policies. What power they do have lies with lobbyists, who are primarily interested in enhancing government support for charitable organizations.

The InterPARES Project does not focus specifically on the needs of this stakeholder. There are few, if any, theories and products of the InterPARES Project that directly impact charitable and non-profit organizations. Response by government organizations to the research products, the implementation of record-keeping initiatives, or the establishment of new legal requirements governing the handling of electronic records could all potentially impose new demands on members of this stakeholder group. However, any reaction by this sector to fundamental changes in policy or process will likely be a response to the impact of the research on other stakeholders.

(c.) Religious Institutions

Religious institutions have common concerns with charitable and other non-profit organizations. However, religious institutions also have their own separate considerations. Their long-term emphasis on recording information about their constituents has an important secondary value. Historically, religious institutions have provided genealogists and historians some of their richest sources of personal records. The maintenance of records in religious institutions is often legally and theologically mandated. The shift to electronic record keeping will continue to challenge the large community of archivists in religious repositories to maintain continued vigilance in preserving the authentic records of their

congregations.

Religious institutions have a legitimate interest in the formulation and implementation of electronic records preservation policies. Just like any other type of organization, they have a legitimate responsibility to maintain authentic records created during the normal course of business of the organization. Religious institutions have limited urgency for the implementation of electronic records preservation initiatives. The record-keeping practices of most religious institutions are well established and proven in the realm of paper records. A fundamental change to electronic record-keeping practices will likely occur slowly.

Religious institutions have very limited power to influence the implementation of electronic records preservation policies. It is unlikely that a religious institution would have the resources to manage digital preservation on a large scale. Their power rests in the significant lobbying presence of religious institutions and the activity of archivists from such repositories in professional organizations (see above).

Religious institutions that attach theological meaning to their records may need to consider the nature of electronic records. Since preservers cannot preserve original records, they can only preserve the ability to reproduce authentic copies, any religious or procedural significance associated with a record or any of its components (such as a seal or the medium) may be compromised in order to facilitate preservation. However, diplomatics was derived from the practice of examining Papal records. Some religious institutions may trace their record-keeping practices from similar traditions, and therefore may find that the products of this research apply clearly to their specific record-keeping traditions.

The InterPARES Project is not focusing specifically on the needs of this stakeholder. However, the active presence of religious archivists in professional organizations such as the Society of American Archivists will facilitate the examination of InterPARES products by this audience.

(d.) Professional Organizations

Professional organizations are interested in the electronic records research of the InterPARES Project only if and because their constituencies are interested and/or affected. This is particularly true for professional organizations that represent other stakeholder groups mentioned here, such as archivists, librarians, IT professionals, or lawyers. It is the task of these organizations to help keep their constituencies informed about issues that affect them, serve as places where professionals can discuss these issues, and create standards.

Professional organizations such as SAA or ALA are assumed to be acting on behalf of their members and the larger profession as a whole. This strong sense of legitimacy adds to the power of these groups to implement programs and actions. There is no real urgency to the claims of professional organizations. These groups do, however, place time constraints upon any group that wishes to contact the represented constituencies through publication cycles or meeting proposal deadlines. Certain professional organizations do have a limited ability to facilitate the implementation of electronic records preservation. Professional organizations are often created to address standards and best practices. Their power is mostly of a normative nature. These organizations do have implied power over the project, because of their roles in informing their members. If an organization works purposefully to hide the work of InterPARES, the project is limited in its ability to influence practices of those particular professionals.

Researchers from the American team of the InterPARES Project have discussed issues and presented research findings to several key professional organizations, including: the Society of American Archivists, Association of Canadian Archivists, Information Society Commission, International Association of Social Science Services and Technology, Council of Federal Libraries, American Society for Information Science and Technology, Association for Library and Information Science Education, International Association of Social Science Services and Technology, among others.

(e.) Standards Bodies

At the international level, communications standards come from the International Telecommunications Union (ITU) while computer standards come from the International Organization for Standards (ISO). While foreign governments play an active role in the international standard setting process, in the United States, almost half of all standards are set by the private sector as part of a voluntary consensus process, in which all or most of the key players—including government—participate. Nationally, committees, trade groups, and professional societies that are organized by the American National Standards Institute (ANSI) create standards. The National Institute of Standards and Technology (NIST) sets standards for the U.S. government. There are certain U.S. government agencies that are also very influential, including the Department of Defense and Federal Communications Commission.^[26] Among the dangers that the United States faces today is a loss of competitiveness, due partially to a failure at leadership in the international standards development process.^[27]

There are three different ways of achieving standards in the United States: 1) standards can be set through the market, on a de facto basis; 2) standards can be set by government, through the regulatory process; and 3) standards can be negotiated through a voluntary consensus process.^[28]

Standards makers want every standard to be successful. To ensure success, they are concerned about how comprehensive the scope of the standard should be and when standardization should be promulgated.

The InterPARES Strategy Task Force developed a framework and set of principles to be used in formulating new standards and evaluating existing policy and standards environments. These were subsequently contextualized by the national research teams participating in InterPARES into the national domains of participating members.^[29] As part of this effort, US-InterPARES researchers evaluated the current United States legislative and standards environment to assess the extent to which it addresses the recommendations emanating out of the InterPARES Domain Task Forces.^[30]

(f.) The Public

The public can be described as potential or latent stakeholders. Most members of the public are in some ways affected or influenced by the research of the InterPARES Project. However, most do not fully understand these effects and influences. The general public is not responsible for electronic records preservation, but they are the subjects of electronic records that are created, maintained, and preserved. Public perception and understanding of the importance of the research of InterPARES would only benefit the project.

Alone, the public does not have power to control what decisions are made regarding electronic records research, to facilitate the implementation of a plan or standards, or to exert influence that affects the research negatively. The public's power is only exerted through other groups. Public pressure can influence government, non-profit organizations, professional organizations, and even for-profit industry. A quick way to get a policy maker to listen to the group's ideas is to have the public demand it. Garnering sufficient public support is a complicated task, but one that must be given time and resources. [\[31\]](#)

InterPARES is not explicitly considering the interests of the Public. The complex morass of theories and modeling is well above the understanding of the average person. There has been little or no effect to reach out to general media outlets or community groups. To some degree, participating universities have attempted to facilitate this out reach, but have met with resistance from researchers.

III. Conclusion

The InterPARES Project Strategy Task Force Report intellectual framework for the articulation of international, national, and organizational policies, strategies, and standards for the long-term preservation of authentic electronic records acknowledges that any policy, strategy, or standard is created within, and must be

articulated in a manner suitable for a particular environment. In order to ensure that these are created and articulated suitably, these policies, strategies, and standards must reflect a synthesis of archival requirements for authentic electronic records with any particular environmental constraints. They must also reflect the possibilities and mechanisms for committing resources for the cause, as well as for obtaining the support and commitment of stakeholders. This stakeholder analysis seeks to examine the contexts, perspectives, and needs of stakeholders in electronic records preservation research, and the outcomes of InterPARES in particular. Because the U.S. context is very complex, and not yet fully defined, stakeholder relationships are examined with respect to the InterPARES Project's research, digital preservation research in general, and the environment in which electronic records preservation may be implemented. This analysis is not the final statement on the needs and concerns of stakeholders of electronic records preservation research projects like InterPARES, however. Much of the analysis is based on secondary sources or assumptions and future research projects would greatly benefit from considering stakeholder needs in more detail throughout the project, perhaps by conducting focus group research with a group of experts representing the concerns and interests of the various stakeholder groups.

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