Foreword

Margherita Repetto Alaia*

Director, Istituto Italiano di Cultura, Vancouver

I met Luciana Duranti soon after my arrival in Vancouver, at the ceremony when she received the Award for the Academic of the Year 1999 at the University of British Columbia (UBC). While listening to her acceptance speech, the inspiration leading to the InterPARES Project became instantly clear to me, since the Latin tradition of paleography and manuscript preservation - or "diplomatics" - was the subject of one of the basic courses in the field of history that I took at the University of Rome, and one which I enjoyed immensely.

So, while hearing about the issues tackled by the research project Luciana was directing, it occurred to me that a symposium on this theme could be of high interest to many *very* different areas of society -- and not only in the "cultural" sector as it is customarily understood, but also in those fields that are generally characterized as

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"productive." It also occurred to me that it would be appropriate for the Istituto Italiano di Cultura to play a role in promoting such a symposium, given the fact that Italy is one of the countries where the preservation of documents has been historically an issue and the science of diplomatics has flourished since ancient times. As today's proceedings will show, in fact, we are dealing with an *old* science that can yield some surprisingly interesting solutions to utterly *new* problems, i.e. those ensuing from the use of electronics records. The knowledge of modern, contemporary issues, in other terms, cannot but result in a short-sighted, limited and virtually lame ability to cope with contemporary problems unless we make use of the knowledge created and preserved by scholars from the past -- a consideration best expressed in the ideas of the mediaeval school led by the humanist Bernard de Chartres, according to which the centre of man is the *ratio*, and the mission of man is to build, rather than re-build, culture using the foundations set by the predecessors. We are "dwarfs on the shoulders of giants," as Bernard de Chartres brilliantly put it, and from up the shoulders of the ancient giants we, the dwarfs, can see better and look farther ahead. This seems to me a very appropriate metaphor to describe the approach of the InterPARES project, which takes advantage of an old science to build solutions to a very new problem.

Many of the scholars and experts that enrich the InterPARES team were brought together on the occasion of the international symposium

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European and Italian history.

entitled “How Do You Know it’s the Real Thing? Authentic Records in the Electronic Age”, which took place on February 19, 2000, at the Royal Bank Cinema of the Chan Centre for Performing Arts, at the University of British Columbia in Vancouver and whose proceedings are presented in this volume. The symposium was made possible thanks to the joint efforts - in terms of human resources, organizational skills and financial contributions - of the Italian Ministry of Foreign Affairs (through the Istituto Italiano di Cultura in Vancouver), the InterPARES Project and the Institute for European Studies of the UBC. The event was presented in association with the Italian Chamber of Commerce of British Columbia, and received the support of the Chan Centre for Performing Arts and the Museum of Anthropology of UBC.

Almost all the speakers have been so gracious as to send in their revised papers for the publication of this volume. The issues raised in the symposium about the long-term preservation of authentic electronic records are of extreme urgency and importance. Moreover, in different countries and contexts, the institutions which have traditionally been charged with the tasks of preserving conventional records and making them accessible and re-usable, are facing problems of almost identical nature in dealing with electronic records -- at least, judging from the information provided by each of the thirteen papers collected here. All these are additional reasons to call for international collaborative efforts such as the InterPARES project.

After the introductory remarks of Sima Godfrey, the Director of the Institute for European Studies of the UBC, the purpose, structure and procedures of the InterPARES project are clearly and exhaustively explained by its Director, Luciana Duranti. Her paper precedes the insightful considerations on the sense of the archives in today's society voiced by Ian Wilson, the National Archivist of Canada. An informative overview of what is happening in the field of electronic records at the level of the European Union is then given in Ken Hannigan's paper.

The papers that follow step down from the European Union's to the individual countries' level, and provide the reader with valuable information about the general situation and/or specific issues currently debated in several E.U. countries, namely: Sweden (Torbjörn Hörnfeldt), the Netherlands (Peter Horsman and Hans Hofman), Portugal (Francisco Barbedo), Italy (Gigliola Fioravanti and Maria Guercio), the UK (Ian Macfarlane) and France (Christine Pétillat). The last paper in this volume is devoted to the "e-mail litigation wars" in the U.S. and is authored by Jason R. Baron.

I believe this volume to be very valuable both for current information professionals and for future researchers. The level of awareness that should be raised on these issues is probably still inadequate in the different sectors of society, and it is my hope that this book can represent a contribution, however small, to the growth of such awareness.

I would like to express my thanks, to all the speakers who took part in the Symposium and to all those who have made it possible, in particular Luciana Duranti and Sima Godfrey. Special thanks also go to the President and the Dean of Arts of the University of British Columbia for hosting the Symposium and for helping us in its organization.

Introductory remarks

Sima Godfrey[*]
Director, Institute for European Studies, University of British Columbia

It gives me great pleasure to welcome you all to this special symposium on "Authentic Records in the Electronic Age." This event would not have been possible -- or even conceivable -- without the tireless support of many people, and of two women in particular. First, my colleague at UBC, Luciana Duranti, the Director of the extraordinary InterPARES project which she has brought to Vancouver this week. I would like to thank her both publicly and personally for giving non-specialists like myself this opportunity to benefit from the wisdom and experience of her outstanding archivist colleagues in Europe and Canada. While Luciana assured us of the technical and intellectual expertise we would require for this symposium, Margherita Repetto Alaia, Director of the Italian Cultural Institute in Vancouver, assured the smooth and professional organization of this event, and to her and all her colleagues at the

[*]Sima Godfrey is the Director of the Institute for European Studies at the University of British Columbia, where she also is Associate Professor of French. Prior to this, Godfrey taught at the University of North Carolina in Chapel Hill (1978-1989). Sima Godfrey has been an active member of the Modern Languages Association of America and is well recognized in her field of 19th century French literature and cultural history, where she has written authoritatively on such authors as Baudelaire.

Istituto, on behalf of everyone here today, I would like to express my appreciation and my thanks.

As you may have gathered, I am neither an archivist nor a librarian by training, but like most people, and certainly like all academics, I rely desperately on the work of librarians and archivists for accessing important records and data. And my reliance on their work -- the decisions they make about authenticating, cataloguing and preserving data -- only continues to grow, as information and records proliferate in an electronic form that is more and more diffuse and, seemingly, less and less subject to control. Though I am not a librarian, I find the universe in which I operate eerily coming to resemble the infinite library that the great Argentine poet, fabulist and, later, Director of the National Library in Buenos Aires, Jorge Luis Borges, described in his short story, "The Library of Babel."

In that story, published in 1941 in the volume "The Garden of the Forking Paths," Borges imagines a universal library, infinite in extent, containing all human knowledge. Such a library appears at first as a mysteriously realized but beautiful dream, something of a scholar's paradise:

> "When it was proclaimed that the Library contained all books, the first impression was one of extravagant happiness. All men felt themselves to be the masters of an intact and secret treasure."

Soon, however, the dream reveals a nightmarish quality. The Library has no perceivable order. Somewhere on its numberless shelves sits a

catalogue that no one can find; and amidst dizzying arrays of worthless junk countless false catalogues exist. Human enlightenment is there for the taking, but in this great intellectual mirage no one can drink at the fount of knowledge.

As a scholar of literature, I cannot resist reading to you some excerpts from the text, which opens with a phrase that surely resonates with new meaning in our expanding age of electronic information and records:

> "The universe (which others call the Library) is composed of an indefinite and perhaps infinite number of hexagonal galleries…"

The narrator of the story is one of its denizens, '*los hombres de la Biblioteca*,' who was born in the library and has spent his life wandering among the book-stacks.

> "Like all men in the Library, I have travelled in my youth; I have wandered in search of a book, perhaps the catalogue of catalogues."

Although, like the other denizens in the library, he may have rejoiced when he first discovered the true nature of their library, he has since sunk into despair. For the Library of Babel contains not only everything that is true, but also everything that is false, and a great deal besides that has no meaning at all**.** "Man", in the words of the narrator, is **"**the imperfect librarian," who must find his way through the web-like labyrinths of this universe.

As a most imperfect librarian, I would like to conclude by noting how grateful we are today to have this distinguished group of international archivists here with us to help guide us through the hexagons and spirals of the new "library of Babel" that we are living in. Moreover, I am eager to hear their responses to the pressing questions that Borges' narrator intimated more than half a century from inside the infinite library's walls: How do you know it's the real thing? How do we guarantee the authenticity of documents? And how shall we discern and preserve data in this rapidly growing electronic universe?

The InterPARES Project

Luciana Duranti
Director, InterPARES Project

Luciana Duranti is a Professor in the Master of Archival Studies Program at the School of Library, Archival and Information Studies of the University of British Columbia, where she has taught since 1987 and has occupied the position of Associate Dean Research for the Faculty of Arts from 1997 to 1999. Prior to moving to Canada to teach at UBC, Luciana Duranti - a former President of the Society of American Archivists - taught at the University in Rome and served as State Archivist in the State Archives of Italy. She is presently the Director of the InterPARES Project.

The last decade has generated more recorded information than any previous decade of human activity. The fact that the majority of these data is less accessible than ever before is one of the ironies of the modern information age. Idiosyncratic software systems generate, manage, and store digital information using technologies and media subject to the dynamism of the computer industry. This digital information gets lost in a self-perpetuating and expensive cycle of obsolescence and incompatibility. As a result of media fragility and technological obsolescence, the term preservation as applied to electronic records no longer refers to the protection of the medium of the records, but to that of their meaning and trustworthiness as records.

More importantly, organizations and individuals generate records in a variety of media and formats. It is quite common for records relevant

to a single matter to exist partly in a paper file, partly in an e-mail box, and partly in a spreadsheet application or in a relational database. It is difficult enough to establish and maintain the essential links among these records while they are being actively used. At this time, it is not known how to preserve such links over the long term so that, one hundred years from now, users will be able to see the entire dossier relating to the matter they are exploring, thereby understanding each record in context as well as the development of the whole affair.

Ad hoc attempts have been made to reduce all records produced by an office to a single medium, for example, by printing out e-mail and inserting it in a paper file, by scanning paper documents into electronic systems, or by converting electronic and paper records to microfilm. These attempts have been unsuccessful for a number of reasons. First, the conversion of records only for preservation reasons hampers the flow of work in the office, and therefore its implementation tends to be sporadic and inconsistent. Second, many records do not lend themselves to such conversion. For example, hypertext records cannot be printed out to paper, and scanned maps or photographs are not always reliable substitutes for the paper originals. Third, court decisions have rejected the practice of converting electronic records to other media on the grounds that the converted records lack elements critical to their use as evidence[1]. For example,

1 *Armstrong v. the Executive Office of the President*. U.S. District Court for the District of Columbia. 810 F. Supp. 335 (DDC 1993). Friedman, Paul L. *Court*

the printout of an electronic spreadsheet will not contain the formulae on which calculations are based.

The effects of the adoption of information and communication technologies without forecasting and planning for the consequences of a hybrid records environment, media and digital obsolescence, and the proprietary and idiosyncratic nature of applications, have already been witnessed in government and other organizations.

Even when accessibility overtime can be ensured, the inability to assess the authenticity of electronic records is a serious problem. Authentic records are records that can be proved to be what they purport to be, immune from any sort of tampering and corruption, that is, records that *are trustworthy as records*.[2] Records' authenticity depends on their mode, form and state of transmission as drafts, originals or copies, and on the manner of their maintenance, preservation and custody. An example of the problems presented by the inability to prove that records are authentic is offered by the Somalia Affair. During the spring of 1996, the inadequacy of procedural mechanisms for ensuring the authenticity of electronic records became a focal point of hearings held by the Canadian

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Opinion Transcript. U.S. District Court for the District of Columbia. Civil Action No. 96-2840 (PLF). October 22, 1997.

[2] Authentic records are not the same as reliable records. The latter are records able to stand for the facts they are about, that is records which are trustworthy as to content. Reliability is conferred to records by the controls exercised on their creation and by the completeness of their form.

Commission of Inquiry into the Deployment of Canadian Forces to Somalia. As part of its investigation, the Commission requested access to National Defence Operations Centre (NDOC) logs, which were maintained in an automated database and which contained a record of all message traffic coming into National Defence headquarters from Canadian Forces' theatres of operation. During its review of the logs, the Commission discovered several anomalies, including entries containing no information, missing serial numbers, or entries with duplicate serial numbers. The Commission was concerned that there may have been deliberate tampering with these logs. Although subsequent investigations were unable to show evidence of tampering, they could not exclude the possibility of it, because of the absence of standard operating procedures with regard to the log, the complete ineffectiveness of the security system in place, a lack of system audits, and the tendency of officers to bypass the awkward system. Therefore, the Commissioners concluded that NDOC logs were not a reliable record of transactions at the operations centre either for present investigators or future researchers[3].

Accessibility to authentic records over the long term is a need of all organizations everywhere. Therefore, an interdisciplinary and international team of researchers has joined forces to address it in a systematic way. The International Research on Permanent Authentic

[3] [Canada], Dishonoured Legacy: The Lessons of the Somalia Affair. Report of the Commission of Inquiry into the Deployment of Canadian Forces to Somalia, vol. 5 (Ottawa: Minister of Public Works and Government Services Canada, 1997), 1218-1219.

Records in Electronic Systems (InterPARES) aims to formulate principles and criteria for the development of international, national and organizational policies, strategies, and standards for the long-term preservation of authentic electronic records[4]. It is directed by myself and carried out by national and multinational research teams from various countries, including, among others, Canada, the United States, the United Kingdom, Ireland, Sweden, the Netherlands, Finland, Germany, France, Portugal, Italy, Australia, Hong Kong, and China[5]. A global industry team includes multinational companies in the pharmaceutical, biochemical, health and computer fields.

The research project is divided into four domains. The first domain aims to identify the requirements for preserving authentic electronic records. The second domain aims to establish whether, in order to satisfy the requirements for authenticity identified in domain one, the selection criteria and methods for electronic records need to be revised or even radically changed. The third domain aims to develop

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[4] The direction of the research and its infrastructure are funded by the Social Sciences and Humanities Research Council of Canada (SSHRCC), and by the Hampton Fund of the University of British Columbia (UBC) and the UBC Vice President Research Fund and Dean of Arts Fund. The national and multinational research teams are funded by national granting agencies and institutional and organizational contributions. For example, the Canadian team is funded by SSHRCC and the American team by the National Historical Publication and Records Commission (NHPRC).

[5] The national teams are the Canadian, American, Australian and Italian research teams. The multinational teams are the European, Asian and Global Industry research teams. In the course of this first year of the research, multinational teams are still open to the participation of additional members. For example, the Asian team may be joined by Japan and Korea.

methods, procedures and rules for the preservation of electronic records according to the requirements identified in domain one, and to define the responsibilities for implementing them. The fourth domain aims to develop a framework for the formulation of strategies, policies and standards.

The group of researchers works by means of task forces whose composition cuts across the various teams and is based on specific competence on the subject matter and different disciplinary background, such as, besides archival science, computer engineering, law, diplomatics, and music theory.

The research methodologies used are as varied as the disciplines involved in the research[6] and include surveys, case studies, diplomatic analysis[7] and modeling[8]. Preliminary findings are tested and the

[6] The basic concepts that constitute the theoretical framework of the project are those developed in the course of a previous project on the preservation of the integrity of electronic records while they are still necessary to the creator for carrying out its business. See Duranti, Luciana and Heather MacNeil, "The Protection of the Integrity of Electronic Records: An Overview of the UBC-MAS Research Project," *Archivaria* 42 (Fall 1996): 46-67. The web site of this project is: www.slais.ubc.ca/users/duranti/

[7] Diplomatics is a science the main purpose of which has been, over the centuries, to assess the authenticity of records of unverified provenance, thus independently of their context. For this reason, it is especially useful for identifying commonalities where they are not readily apparent, and for developing standards.

[8] Modeling methodology consists of two parts, one graphically representing the activities involved in each hypothesis and the other the entities involved in each activity. The representation of the **activities** is done by decomposing them hierarchically at as many levels as needed and identifying for each activity at every level: 1) what guides or regulates it, 2) what is used to perform it, 3) what initiates it, and 4) what results from it. These four things are **entities**, which are represented in different models by identifying their **attributes** or **characteristics** and their **relationships** one to another, on the basis of the theory and methods of diplomatics.

results communicated to the task forces. After the appropriate revisions, they are submitted to the international team for further refinement, and then tested again. To ensure consistency within the task forces and among testing sites, training seminars are regularly conducted, during which the researchers learn how to carry out the case studies so that results are comparable as to substance and form, how to use the modeling techniques appropriate to each purpose, how to test proposed methods and procedures, etc. A glossary defining all the terms used in the research also contributes to clear communication among the researchers and between them and those to whom the findings are disseminated. To guarantee that research results will be valid in each jurisdiction involved in the research, test sites are in all countries involved in the research and belong in both the public and private sector. Notably, ten national archival institutions and several companies participate in both the development and the testing of the findings.

The contextualization of the findings is vital to the success of this research project and is the primary reason for the existence of national and multinational teams within the larger international team. Their task is to take the results of the work of the task forces and examine them in the context of the administrative, legal and social systems of each country. In fact, while the project aims to formulate the universal principles, concepts and criteria that must guide the articulation of

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To support the modeling process, every activity, entity, attribute, and relationship named in the models must be consistently and rigorously defined in an

strategies, policies and standards, these must be viable and implementable within each nation. This does not mean that the requirements for authenticity must reflect the legislation that in each country establishes procedures and norms for authenticating records. While authenticity is a quality of the record, authentication is only a means of proving that a record is what it purports to be at a given moment in time. Authentication, in other words, is a declaration of authenticity in time resulting either by the insertion or the addition of an element or a statement to a record, and the rules governing it are established by legislation. The requirements for the continuing verifiable authenticity of records go much beyond legislated means of authentication and even juridical principles and structures, deriving from the historical stratification of traditions, uses, attitudes, and perceptions that each culture brings to bear on what it treats as an authentic record. This is the reason why contextualization of the requirements identified for the authenticity of electronic records is essential to the success of the research project.

As I mentioned earlier, the research is carried out by means of three Task Forces (on Authenticity, Preservation and Appraisal) and one Committee (for the Glossary). At this time, the Authenticity Task Force is looking in a detailed way at a large variety of electronic systems following a hierarchy of growing complexity, from systems regarded as simple databases, to document management systems, systems containing sensory presentations (i.e., digital objects that are

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interdisciplinary international glossary.

performed, such as music and film, or rendered on screen as images).[9] The primary product of the work of the Authenticity Task Force will be a typology of electronic records with conceptual requirements for authenticity defined for each record type. To populate the electronic records typology, the Task Force will perform an analysis of the empirical data gathered during the case studies.

The primary instrument that is used to analyse case study data is the *Template For Analysis*. This template was created by the Authenticity Task Force using the diplomatic elements of electronic records identified in the findings of a previous research project, carried out under my direction in 1994-97 and entitled "The Preservation of the Integrity of Electronic Records."[10] The template elements were then refined and expanded by utilizing the InterPARES International Team's combined knowledge and experience with types of electronic records and electronic systems. To further refine the template as well as to construct the electronic record typology which will be based on it, a form of grounded theory is being used. Grounded theory is a method for discovering concepts and hypotheses and developing theory directly from the data under observation[11]. Cases are selected

[9] This categorization has been made in an unpublished paper written by Clifford Lynch for a workshop on authenticity held in Washington, D.C. on January 22, 2000 by the Council on Library and Information Resources, and entitled "Authenticity and Integrity in the Digital Environment: An Exploratory Analysis of the Dominant Role of Trust." He discusses data, documents, sensory presentations, and interactive works.

[10] See footnote 6 above.

[11] Glaser, Barney G. and Anselm L. Strauss. *The Discovery of Grounded Theory: Strategies for Qualitative Research* (Chicago: Aldine Atherton, 1997), pp. 6-7, 46.

for study "according to their potential for helping to expand on or refine the concepts or theory that have already been developed. Data collection and analysis proceed together."[12] Because a grounded theory is used, theoretical, rather than statistical sampling is applied in the selection of the case studies. The process of theoretical sampling is "a process of data collection for generating theory whereby the analyst jointly collects, codes and analyses his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges."[13] Accordingly, criteria for selection have been developed, which will evolve as case study data are analysed. Not all case studies will respond to all the criteria listed below, but each case study should respond to at least three of them. The members of the various research groups prepare lists of systems candidate for analysis complete with a brief description, including which criteria they meet and why. The Authenticity Task Force selects case studies from the lists in a way that there is sufficient variety, but at the same times there is a certain number of similar systems that can be compared, and determines the schedule on which each case study will be conducted (i.e. first, second, third or fourth round).

The criteria are:

1. Systems that contain, generate, or have the potential or possibility of generating records;

[12] Taylor, Steven J., and Robert Bogden, *Introduction to Qualitative Research Methods: The Search For Meanings*, 2nd ed. (New York: Wiley, 1984), p. 126.

2. Systems that have gone through one or more migrations;
3. Systems where migration(s) was (were) from one electronic system to another electronic system;
4. Systems for which several aspects of technological context (storage media, system software, application software, data format, schema) were changed in the course of each migration;
5. Systems for which the pre-migration and the post-migration versions are available and are up and running;
6. Systems for which detailed documentation (design, implementation and metadata) exists;
7. Systems with a diversity of information configurations (e.g., they contain both text and images);
8. Among the candidate systems proposed by the same archival institution, an effort should be made to ensure diversity in content and type of records;
9. Between institutions, an effort should be made to identify and conduct case studies on record-keeping systems performing similar functions (e.g., students' registration systems in different universities).

The Preservation Task Force has begun modeling the preservation activity and, in the process, it has clarified some fundamental properties and behaviours of electronic records. According to the

[13] Glaser and Strauss, p. 45.

preliminary report of the Task Force Chair[14], the first clarification is that it is not possible to preserve an electronic record; it is only possible to preserve the ability to reproduce an electronic record.

> "Whether the record is intended to be presented to humans or to computer systems, it is always necessary to retrieve from storage the binary digits that make up the record and process them through some software for presentation. Presuming the process is the right process and it is executed correctly, it is the output of such processing that is the record, not the stored bits that are subject to processing. (Analogously, a musical score does not actually store music. It stores a symbolic notation which, when processed by a musician on a suitable instrument, can produce music.) In this sense, all electronic records in storage are 'virtual' records.
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> The inevitable requirement to reproduce an electronic record means that demonstrating the authenticity of electronic records depends on verifying that (1) all the right data and only the right data were retrieved from storage, (2) the retrieved data were subjected to an appropriate process, and (3) the processing was executed correctly. This technical verification is necessary, but not sufficient, to demonstrate the authenticity of an electronic record. It is obviously necessary because if any of these three conditions is not satisfied, the result of the processing of retrieved data cannot be (asserted to be) the same as the electronic record from which the stored data was produced. It is not sufficient because there is nothing in it that applies specifically to a record. It would be accurate, then, to say that this technical verification is a method for demonstrating that a digital object produced from stored digital data is an authentic reproduction of a digital object that was stored. To be consistent, we should not even refer to 'a digital object that was stored,' but to the

[14] The Chair of the Preservation Task Force is Ken Thibodeau, from the National Archives and Records Administration of the United States. The Chair of the Authenticity and Appraisal Task Forces are respectively Heather MacNeil and Terry Eastwood from the University of British Columbia.

> digital object that was the source of the stored data. To move beyond the general class of digital objects to the more specific class of electronic records, we must apply criteria which specifically relate to authentic records."[15]

These criteria, that is, the requirements for ensuring the authenticity of electronic records, will result from the work of the Authenticity Task Force, but there is a substantial amount of analysis related to technical aspects that the Preservation Task Force must do even before the findings of the Authenticity Task Force are available. One of them is modeling different 'preservation' methods (i.e., methods for counteracting obsolescence and media fragility).

The Appraisal Task Force has completed an analytic review of the literature concerning the appraisal of electronic records. Subsequently, it has acquired from several archival institutions that have received from the creator electronic records the related appraisal reports. An examination of these and of the case studies results[16] has prepared the foundation for the modeling effort that will begin on the first week of May 2000.

The Glossary Committee is composed of a member of each Task Force, a neutral chair and the project director. Three students, research assistants, do the research work for it. The Committee

[15] From the preliminary report of the Chair of the Preservation Task Force, March 31, 2000.

[16] It is important to note that the questionnaire guiding the semi-structured interviews used in the case studies includes several questions the answers to which have significant consequences for the appraisal of the records generated and/or maintained in the system in question.

receives nominations of terms for the glossary with one or more proposed definitions from the Task Forces, through the Task Force representative in the Committee, or from the Project Director (especially if the term is formally used in one or more InterPARES document). The research assistants research the term and its definition through time and across disciplines, and then submit the outcome to the committee. Discussion follows and then vote, which must be unanimous. If unanimity is not reached, the term in question and related definition are sent back to the proponent with comments and recommendations. To ensure internal consistency of the Glossary, it is inevitable that terms and definitions already included in the Glossary be revisited in light of new terms and definitions proposed and developed by the Task Forces in the course of their work. It is the shared responsibility of the Committee and the Task Forces to monitor consistency and to either solicit or submit proposals of changes to already approved terms.

As can be seen from the above report, the InterPARES research has begun in stride and reached a good momentum. From now on one can expect increasing activity and results. We will endeavour to communicate them on a regular basis to both the archival profession and the community at large through conferences, talks, articles and the project's website: www. interpares.org.

The Test of Time

Ian Wilson
National Archivist, Canada

Ian Wilson has been Canada's National Archivist since July 1999. He was previously the Archivist of Ontario, where he was also responsible for Ontario's public library system. Prior to that, he served as the provincial archivist for Saskatchewan, Queen's University archivist and as archivist for the City of Kingston.

Today's InterPARES Symposium addresses the following question: how can the electronic records we create and acquire remain authentic or "real" over the passage of time and through changes in the information technology environment? It is a critical question for those of us who are responsible for archives, and it is a question with no easy answer. But I believe that the work being undertaken by InterPARES in this area will lead us to a fuller understanding of this issue and possible solutions, and the National Archives is pleased to be an active partner in this process.

Allow me to digress. The announced title of my presentation is "The Test of Time," although I think that my remarks could be described as "... the gift of one generation to another: the Real Thing for the Pepsi Generation." This phrase contains three separate elements, two of which are familiar to all of us; the first part of the phrase, "the gift of

one generation to another" is a short extract from Sir Arthur Doughty`s oft-quoted description of the value of archives[1].

The "Real Thing" of course refers to *Coca-Cola*. When company officials tried to change its formula several years ago, there was a widespread and vocal outcry from consumers. There was no need to change and now we have "classic" *Coke*: rooted in the past, connected with what has gone before, accepted and revered. The real thing is a sure thing, authentic, worth preserving, something to be cherished.

And then there is *Pepsi* and the "*Pepsi* Generation," a slogan suggestive of a more modern approach, a future orientation; it speaks to the "here and now" society, one that accepts change for its own sake, one that has little connection to the past. And this worries me. We live in a time when, for many people, advertising images and "virtual reality" constitute reality. What is the difference between *Coke* and *Pepsi*? Are "Star Wars" and dinosaurs any less real and immediate than the moon landings or space probes to Mars, or were these staged too? In a society where the basic elements of our national history are not being taught, is it any wonder that the past is truly a foreign land for many of us? How can we retrieve what is real and relevant and, more importantly, how can we transmit this to the generations who will follow us?

[1] The full phrase is: "Of all national assets, archives are the most precious. They are the gift of one generation to another and the extent of our care of them marks the

The answer lies in archives. Society needs an institution dedicated to information, selected on defined criteria and preserved in the full context of its creation as evidence of action, decision and transaction: information in all documentary media, from both public and private sources. Archives are about authenticity, about facts and stories and memories, experiences that create our collective memory as a society. A world without archives is unimaginable; for this reason, Arthur Doughty dedicated his professional career as an archivist to ensuring that the archival record would be preserved for the use of future generations.

To do this, archives must be committed to the integrity of the record, the complete record, and the real and authentic record. From my own perspective as National Archivist of Canada, and on behalf of my colleagues in archives, large and small, throughout the country, I can say with confidence that the need to ensure the availability and authenticity of electronic records is central to the future of the archival mission. In my remarks today, I would like to provide a brief overview of the challenges of managing and protecting information in electronic forms and the importance – and *urgency* – of addressing those challenges, and of developing tools that will guide us, individually and together, into the future.

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extent of our civilization." Source, Arthur G. Doughty, *The Canadian Archives and its Activities* (Ottawa, 1924), 41.

The start of a new century is an appropriate occasion to think about time – past, present and future – and assess the impact of some of the major changes that have occurred in the way we create, communicate and share information and knowledge. While information technology has conquered space and distance, it has been less successful with time, the fourth dimension. The relationship of time and reality has long been the subject of contemplation by philosophers, scientists and, yes, even archivists. This morning, however, I will remind you of Woody Allen's definition of time as "Nature's way of keeping everything from happening at once."[2]

It is generally accepted that in our own time we are in the midst of a revolution in the way we create, acquire, store and use information and data. Advanced digital computers, the Internet and other modern telecommunications systems are fundamentally changing the way we live, work, learn and spend what little leisure time we have.

For most of us over thirty years of age, the complexity of new technologies is often bewildering. Some of us are still cautiously pecking away at our keyboards and contemplating the existential meaning of the Windows message, "*A fatal error has occurred*." The mysteries and power of modern technologies are perhaps best exemplified by the attitudes and events surrounding the "Year 2000" problem. The most dire predictions included a global economic collapse and environmental apocalypse that would sweep across the

[2] Various sources, including http://www.psc.edu/~nystrom/nn/quotes/quotes.html

world as computers failed to recognize the new century on January 1, 2000. As we now know, the turnover failed to live up to its promise. Upwards of $600 billion was dedicated worldwide to correcting or preventing the problem; it is clear now that it was money well spent or, on the other hand, that the Y2K problem had been grossly exaggerated. There is no doubt that a fix was needed, particularly in computer systems that were heavily date-dependent. The primary lesson to be learned, however, has more to do with how we manage information than with technology. In the preceding decades, both IT specialists and program managers generally ignored the question of whether data would be protected over time and through the entire life cycle of the record. As a result, technology drove management and neither the systems nor the information assets of government and business were effectively managed. Ironically, the Y2K problem was one of those rare instances in history where success has been measured by the fact that nothing happened.

Real or hyped, the Y2K bug taught us not to take technology for granted, nor to assume that we are powerless to alter the course of its development. More importantly, it also reminded us how vulnerable information and data can be when stored and maintained in systems that change rapidly and often. The extent of global attention devoted to resolving this problem and the enormous associated costs have only served to underline our almost total dependence on the electronic record, both as individuals and as a society in general.

In the conduct of business, government, and related activities, we create, receive, maintain and use all kinds of records and information in paper, electronic and other forms. These records are the evidence of human activity. They document and support our business and commercial activities and, ultimately, they are the basis for determining accountability in government, in corporations and in other institutions. The availability of authentic, secure and reliable records and data is absolutely essential.

Within both public and private sector institutions, the document environment has changed radically as automated records and data systems have proliferated in the past twenty years. The growing and often overwhelming volume of documents and data in electronic, paper, and other formats have created problems: poor security for many electronic and paper files; unnecessary duplication; chaotic or non-existent filing systems; the accidental, arbitrary and sometimes deliberate destruction of important files; and a poor understanding of archival requirements. As a result, information is being lost, gone forever, with no chance of retrieval.

Using the federal government as an example, the results of not properly managing and protecting information can range from mild inefficiency to serious legal liability to political scandal. As most of you are aware, Human Resources Development Canada (HRDC) recently released an internal audit suggesting that grant programs worth up to $3 billion a year may have been mismanaged.

Departmental officials admitted that the program suffered from "sloppy paperwork" and commitments were made to improve program management to ensure that "the paperwork is there."[3] Situations such as this, however, point to wider problems and assumptions within government regarding the management, integrity and availability of information and records. Many of you will remember other highly publicized incidents in the recent past where record-keeping issues were central: the Somalia affair and the Krever Commission's investigation into the handling of the blood supply – to name two. In the non-government sphere, record-keeping problems also abound.

The integrity and effectiveness of government operations depends, in large part, on how those who are entrusted to govern value, manage, protect and use its resources. As both an operational and strategic asset, information must be protected for as long as it has value. While for most records and data this means a few years or less, a small proportion of the government's records have very long-term operational, legal, historical or other value.

As National Archivist, one of my highest priorities is to protect the integrity and to ensure the availability of the government record – past, present and future. In collaboration with the Chief Information Officer of Canada and others, the Archives is engaged in developing a comprehensive information management framework consisting of

[3] Daniel LeBlanc, "Bureaucrats mismanaged $3 billion, Ottawa says," *The Globe and*

appropriate principles, policies and practices – some already in place. Among other issues, the framework will address the special challenges and requirements related to managing the expanding volume of government information in electronic formats. Electronic records are by nature fragile and dependent on their technological environments. They are created, captured, stored, transmitted and accessed on hardware and software systems which are often mutually incompatible and which change with a rapidity only Bill Gates would appreciate.

Using the title of today's seminar, we need to ask, especially of those electronic records we hope to preserve long into the future: is it real and will it stay that way? Jeff Rothenberg, a senior computer scientist with the Rand Corporation, summarized the problem of preserving electronic files in his statement that "*Digital documents last forever -- or five years, whichever comes first."*[4] Others describe the problem of long-term data preservation as "the [Mount] Everest of computer science."[5]

Unless we take steps now to deal with this issue, the "Information Highway" that beckons so promisingly before us may disappear when we look in the rearview mirror. The resulting loss of information and of the knowledge that can be derived from it will have a catastrophic

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mail, January 20, 2000.

[4] Jeff Rothenberg, Presentation to the Managing Electronic Records Conference (Cohasset Associates), Chicago, Illinois, November 7, 1995.

[5] Stephen Manes, "Time and Technology Threaten Digital Archives," *New York Times*, April 7, 1998.

and irreparable impact on government, on business and other sectors, and on our collective memory as a society.

The challenge of maintaining the *authenticity* of electronic records is perhaps the most daunting. Will the digital document remain what it purports to be after it moves across wires, through the air, between computer platforms, through encryption systems, across changing media, and over time? Will any of its essential characteristics change or be degraded? Will it still retain the same informational and evidential content, maintain its original structure, and preserve the context of its creation and use?

New approaches to preserving electronic information are being explored in institutions and organizations across the world. The best hope for solutions lies in collaborative international multi-disciplinary efforts such as the InterPARES project, which brings together records managers, archivists, librarians, lawyers, information technology experts and others from the public and private sectors. As you will hear from other speakers today, some issues are now being addressed with the use of current tools and techniques. But future solutions will depend on the vision, commitment and abilities in the information management and information technology professions that are now coming together to meet the challenge of the "real" electronic record.

Those involved in the InterPARES project realize that technology alone will not solve the problem, in spite of the blind faith of some IT

experts. The most critical issues involve the concept of the electronic record itself, and those characteristics that determine its status and admissibility as evidence, its reliability and, above all, its authenticity. These are the crucial issues on which the value of information-centered government electronic services, global electronic commerce and other areas will depend.

We look to InterPARES to provide the theoretical and intellectual basis for addressing these issues as well as leading us to *practical* procedures and products that will assist archives and others to preserve the authentic electronic record. This is truly an urgent need and one that is fully supported by the National Archives. The InterPARES project encourages us, perhaps requires us, to re-evaluate our own institutional policies and practices in the area of appraisal and preservation of electronic records against the framework of archival theory and methodology. Without question, the National Archives will benefit from the research undertaken by InterPARES, particularly in providing record-keeping advice to federal government departments and agencies.

The twentieth century, especially in its final decades, brought major changes in the way we communicate and we deal with all aspects of our personal, business and institutional lives. How well society can adapt to even greater changes in the future depends in part on whether we can learn from the past and from this understanding gain new knowledge to guide us. In the records and documents it creates,

protected and preserved, one generation shares its memory, its knowledge and its wisdom with the next. We must be sure that these records will stand the test of time. We are truly on the threshold: this may be our final opportunity to take the necessary steps to ensure that we will be able to remember the 20th century. If, like Arthur Doughty, we believe that archives constitute our most precious asset, to be passed on to succeeding generations, then we must act and act now to preserve the authentic electronic record.

National Archives and Electronic Records in the European Union

Ken Hannigan
National Archives, Ireland

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The national archives of the member states of the European Union vary in many ways, not least in terms of size. They include organizations whose staff numbers range from 25 (Luxembourg) or 35 (Ireland) to over 400 in France, Spain and the UK and over 800 in Germany. The national archival institutions also differ very much in terms of the extent and nature of their holdings and the extent and nature of their readership. The National Archives of the Netherlands, the UK and Ireland, for instance, hold many records of genealogical interest and as a consequence attract large numbers of genealogical researchers, and huge numbers of visitors to their websites, especially from North America. Many of these visitors now demand on-line interactive information services. In other member states such as Germany, for instance, genealogical records are held mostly by regional or municipal archives, with the National Archives

functioning as the repository of high-level records of central government. Volume and nature of access, the extent of responsibilities and the size of organization all have a bearing on the extent to which archives can prioritize action on preservation issues, including issues concerning the long-term preservation of electronic records.

The two dominant trends that have been shaping the European Union in recent years - expansion and cohesion - have also had a profound influence on the archival institutions of the member states, especially on the national archives. The EU currently comprises fifteen member states and the process has now been launched that will make further enlargement possible, to embrace a possible thirteen applicant countries, including many countries of the former Eastern Bloc as well as Cyprus, Malta and Turkey.

The second trend has been towards cohesion and the creation of the single internal market, a Europe without internal borders and tariff barriers, facilitating the free movement of people, goods and services. This has accelerated considerably since the Amsterdam Treaty of 1997, and a large part of this has involved the removal of obstacles to the provision of services provided electronically across the EU. These developments have affected archives both collaterally and directly. The development of the internal market has necessitated harmonization of the laws of member states where national law, or the absence of laws in certain areas, impeded its development.

Community Law is transposed into national Law by means of Directives of the European Council and Parliament, which must then be reflected in the national laws of the member states. Much of the legislative programmes of national governments, therefore, are now being driven from Brussels and much of this has a profound influence in shaping the juridical context in which national archival institutions operate.

Directives and draft directives in areas such as data protection, legal protection of databases, protection of intellectual property rights, electronic commerce and the use of digital signatures are having, and will have, an impact on archival management. How great an impact depends on how, precisely, the directives are reflected in the laws of the member states. The latest of these directives, for instance, Directive 1999/93 of the European Parliament of 13 December 1999, sets out a Community framework for electronic signatures[1]. As we shall hear from Torbjörn Hörnfeldt, there is considerable worry about a possible threat to archival preservation posed by these new legislative measures, especially those covering personal data and intellectual property rights. It may be some time, and it may require adjudication by courts of law, before we will know for certain if they threaten the rights of archival institutions actually to keep records.

In addition to the collateral effects of these fairly high-level legislative and juridical developments, however, national archival

[1] For information on this Directive, see http://europa.eu.int/eur-lex/en/1.

institutions have also experienced directly the consequences of being a part of a process in which a community of nations is coming together. The procedure whereby the Presidency of the European Council rotates every six months between member states requires the ministries and officials of that member state to become responsible during their country's six-month presidency for ensuring that the work programme for that presidency is carried through. As part of this process, the national archival institution in whatever member state is holding the Presidency will usually engage its equivalent organizations in the other member states in efforts to coordinate action on archival issues. The three areas in which contact and cooperation along these lines have been most consistent have been at heads of institution level (regular meetings of the heads of national archival institutions take place during most Presidencies), among those responsible for the archives of the foreign ministries, and, of course, on electronic records issues. In each of these areas, networks of archivists have developed as a result of formal contacts developed within the context of EU work programmes.

Apart from this centrally driven pan-European contact, however, numerous events, projects and programmes have operated to draw the national archives of the member states together. Generous funding is available from a number of European programmes, for instance, to promote greater access to information for the European citizen and greater cohesion among the cultural institutions of the Community, and many archives have been able to tap into these funds. Within the

current INFO 2000 initiative, promoting greater access by the citizen to information, there are a number of trans-national projects involving archives in the area of digital heritage. These include two linked projects: the European Union Archive Network (EUAN), in which the National Archives of Italy, Scotland and Sweden, as well as the Institute of Social History in Amsterdam, are working together, using ISAD(G) and ISAAR, to examine archival and technical solutions for trans-national access to archival holdings via the Internet, and the European Visual Archive (EVA), a consortium whose aim is to improve access to collections of visual material from European local and national archives, and to make that content available both for the public and for multi-media exploitation[2].

Other projects being grant-aided from European Funds are MALVINE (Manuscripts and Letters Via Integrated Networks in Europe), which involves Spain, Portugal, France, Austria, Germany, Denmark and the UK, and MASTER (Manuscript Access through STandards for Electronic Records) which involves the UK, the Netherlands, the Czech Republic (not yet a member of the EU) and Germany[3]. Such projects tend to be not only transnational, public-private partnerships, but also now place a heavy emphasis on cross-domain activity, requiring archives to join with others of what are termed the "memory institutions" - archives, libraries and museums,

[2] For information on EUAN see www.iisg.nl/nl~euan/. For information on EVA see www.eva-eu.org/.

[3] For information on MALVINE see www.malvine.org. For information on MASTER see www.cta.dmu.ac.uk/projects/master.

or, in short, "ALMs" - in cooperative projects aimed primarily at increasing access by the citizen to digital heritage.

To be frank, the pressure for cross-domain activity has tended to come from the Commission rather than reflecting some spontaneous desire within the disparate domains of the "memory institutions" themselves to come together. Archives, libraries and museums, left to themselves, have tended to occupy parallel, friendly, but distinct universes, although among the key action lines identified for funding under the Fifth Framework for Research and Development in the cultural area, is the digital preservation of cultural heritage[4]. The downside to this cross-domain cooperation is that projects which have this broad involvement have tended to place the focus on current access to information, rather than on preservation of records and, where preservation is concerned, to focus on the creation of digital surrogates of heritage objects rather than on the preservation of digitally-born objects. It is striking, for instance, that in the project that has led to the European Commission on Preservation and Access Preservation Map of Europe, a guide to conservation facilities throughout Europe compiled from reports from archivists and conservators in each of the countries concerned, nowhere is the preservation of digitally-born records touched on, as opposed to the creation of digital surrogates of physical heritage objects[5]. This

[4] European Commission, Information Society Technologies: a programme of Research, Technology Development and Demonstration under the 5th Framework of European Research, 1999 Workprogramme, available online at www.cordis.lu/ist.

[5] See www.knaw.nl/ecpa/ecpatex/map.

probably reflects the failure of those of us who are archivists and who have been concerned with the long-term preservation of electronic records to get our message across not only to our masters and those who control the purse strings, but even to colleagues within our own institutions who are conservators or whose focus is on conservation.

The beginnings of EU-wide archival cooperation focussing specifically on electronic records issues can be traced to a resolution of the Council of Ministers in November 1991 which called on the European Commission to establish a group of experts who would foster greater cooperation among the Community's archival institutions. This group, which included the Directors of all the national archives, published a report in March 1994 entitled *Archives in the European Union* (known as the "Black Book") which identified a number of priority areas for archival cooperation, including research towards a common definition of conservation standards for electronic records, and an appropriate management model for these records[6]. This report has formed the starting point for most of the concerted action on electronic records that has taken place under the aegis of the European Commission.

On foot of this report, the Council of Ministers called on the European Commission to organize a multi-disciplinary forum to focus on the problems of the management, storage, conservation and retrieval of electronic records, and to invite cross-disciplinary

[6] A*rchives in the European Union: Report of the Group of Experts on the Coordination of Archives*, Luxembourg, 1994.

participation from administrative agencies, national archives services and representatives of industry and research. The first such forum, termed the DLM Forum (DLM = *Documents Lisibles par Machine*) took place in Brussels over three days in December 1996. It attracted representation from all the countries of the EU as well as ten others, and also succeeded in drawing representation from archives, administration, academia and industry (both IT and other industries, such as the pharmaceutical industry, for which long-term preservation of digital records is essential). At the conclusion of the Forum, a ten-point action plan was agreed upon. This included immediate establishment of a website and a publication programme, including publication of the conference proceedings and guidelines on best practices for using electronic information -- both of which have now been published and are available from the European Commission and on the website[7]. The plan also called for the development of a training programme for archivists and administrators charged with managing electronic records, and the establishment of separate working parties to investigate into legal aspects of electronic records, to survey arrangements currently in place between archives and administrations for the management of electronic records, and to identify functional requirements for the preservation of electronic records.

A second forum was held in Brussels in October 1999, to consolidate this work. This was a two-day meeting which again attracted over three hundred delegates from thirty countries, including all the

[7] See www.dlmforum.eu.org/.

member states of the EU, many of the applicant countries and the United States and Canada. Again, the essence of this meeting was that it was multi-disciplinary, 69% of the participants being from archives and administrative agencies (of which 29% came from the European Commission itself, representing a huge interest on the part of the European permanent civil service), 19% representing industry (both as service providers and as clients), and the remainder representing academia or consultants.

Between the two fora of 1996 and 1999, a committee of experts drawn from the broad spectrum of constituencies that had been represented at the first forum worked on these points. A major benefit of bringing together assemblies as varied as these has been that the fora have provided listening posts at which archivists could articulate their needs and requirements in respect of their responsibility to preserve the memory of the Information Society, have their message heard by the decision-makers within as influential and powerful a body as the European Commission and, furthermore have this passed on to industry with the support of those decision-makers.

At the conclusion of the 1999 DLM Forum, a “Message to Industry” was issued.

This identified the constituencies represented at the Forum as information-handing professionals, information users, and clients. The message called on industry to participate actively in the debate

concerning functional requirements for electronic documents and records management, and in the development of open standards and specifications for information management software. Industry was asked to provide easily applicable and cost-effective records management and digital archival solutions, and the attention of industry was drawn to the existence of a coherent customer base demanding certain products not currently available in the marketplace. Specifically, industry was called on to provide simple and secure methods of transferring information without the loss of content or presentation between different versions of software products, and to provide open interchange standards between different software products. The message acknowledged that industry would respond to produce the systems and services required to support the management of electronic information only if it was demonstrated that a genuine market demand existed for them and so it also addressed the issue of public procurement and stated that such needs must be defined in greater detail in calls for tender, and that information professionals must ensure that specific requirements of this kind would be included in their organizations' purchasing strategies.

Within the context of this call, and arising from the two DLM fora and the work that was done between them by the Working Group on Functional Requirements, a contract has now been signed within the framework of the IDA programme[8] for the development of model

[8] IDA stands for the Interchange of Data between Administrations, the objectives of

functional requirements (MoReq). The tendering document defining specifications for this is available on the IDA website and a contract for the development of MoReq has been awarded to a UK company, Cornwell Affiliates[9]. The draft specifications advert to existing model requirements such as those produced in the UK, the Netherlands, and the US Department of Defense, and require these to be borne in mind, but state that these are either too theoretical for practical interpretation into software, or too specific to a particular organization and not appropriate to widespread practical application to serve the IDA purpose. The contract between the European Commission and Cornwell Affiliates was signed in December 1999. The draft final report must be delivered 12 months from the time the contract was signed.

A key requirement for the success of MoReq is quality assurance of the content of the document. To ensure this, an international guiding committee of experts in the fields of records and archival management has been appointed to review the drafts of MoReq. It is worth noting that of the seven international experts who have agreed to work on MoReq, five are members of the InterPARES team, so it is likely that the InterPARES research work will be reflected in MoReq. Once these model requirements are agreed, they will be published on the IDA website and, if accepted, promoted through the DLM

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which are to contribute to the setting up of a series of projects dealing with electronic interchange, thus facilitating the development of interoperable networks and electronic data transmission applications.

[9] The URL for the IDA website is www.ispo.cec.be/ida.

process. It is hoped that compliance with MoReq will be referenced in public procurement competitions and it is hoped that software may be advertised as 'MoReq compliant'.

As part of the preparation for the 1996 Forum, and to set the context for some of the discussions, a survey of European National Archives was undertaken to see what was the current state of play in relation to electronic records. In preparation for the second Forum in 1999, a further survey was undertaken. Some minor changes were made in the survey instrument, placing more emphasis, for instance, on policies regarding short- and medium-term preservation, and adding a section on training needs, but as the 1996 survey was intended to be something of a baseline against which progress on this issue could be measured, it was decided to follow much the same format as before although in a slightly extended questionnaire.

This more extensive survey was undertaken by Dr. Kevin Schurer of the University of Essex, according to guidelines drafted by the DLM Monitoring Committee. The survey places a stronger emphasis than before on cooperation between administrations and archives and seeks to identify models where these procedures operate most successfully. It has been complemented by in-depth case studies in 6 countries where such models appeared to exist, namely Sweden, Finland, Germany, the Netherlands, Spain and the U.K.

The results of both surveys, in the form of reports and completed questionnaires, are being mounted on the DLM website in the coming weeks[10]. It is not possible to go into detail here, but some of the most significant points may be noted. It is striking, for instance, how little seems to have changed over the three years between the two surveys. It is almost as if some kind of phoney war has been taking place in relation to electronic records. Over a decade ago archivists were forecasting a catastrophic loss of records if quick action on electronic records preservation did not ensue. Yet among the National Archives of the fifteen member states covered by these surveys, only six indicate that they had as yet accessioned significant quantities of electronic records (i.e. that they have holdings numbering several thousand datasets, or that they run electronic records centres). These are the national archives of three Nordic countries (Denmark, Finland and Sweden) and also those of France and Germany, the only additional country since 1996 being the UK, where the Public Record Office has set up an electronic records facility to cater for electronic records from office systems and has also contracted the University of London Computing Service to establish the National Digital Archive of Datasets (NDAD) for the preservation of structured datasets[11]. This is the only instance at the moment of a national archival institution contracting out the job of electronic record preservation.

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[10] DLM survey on the relationship between public administration and archives services concerning electronic records management in the EU Member States, by Kevin Schürer, available at www.ispo.cec.be/dlm/program/abst_ks_en.html.

[11] The URL for the National Digital Archive of Datasets is http://ndad.ulcc.ac.uk/.

For whatever reasons, and they most probably relate both to lack of resources and to lack of confidence, European national archives are hesitating to get involved in the physical preservation of electronic records, although most declare themselves determined to do so. Of those national archives in the EU currently taking custodial charge of electronic records, Sweden and Denmark have been doing this for longer than anyone else. This seems to flow directly from the strong traditions of immediate public access to information in the Nordic countries, a contrast with the situation in most other European countries where, until very recently, people were accustomed to wait at least thirty years for access. In fact, this time-lapse has been one of the greatest difficulties archives have had to face when trying to focus attention and resources on the problems presented by electronic records.

Of the non-Nordic EU member states holding electronic records, we shall hear later from Christine Pétillat and Ian Macfarlane about the National Archives of France and the Public Record Office in the UK, respectively. The only other major holder of electronic records among the national archival institutions of the EU is the Bundesarchiv in Germany, where since 1991 there has been an electronic records section, although the establishment of this facility derived from the unique circumstances surrounding German reunification. One of the consequences of reunification was that the Bundesarchiv was suddenly handed responsibility for the electronic records of the former German Democratic Republic where many agencies had

suddenly ceased to exist, leaving vast quantities of electronic records in their wake, including records of several hundred thousand former employees of East German government agencies. An exceptional and intensive programme was necessitated to ensure that these records remained accessible[12]. To state that most of the National Archives of Europe have not actually accessioned electronic records is not to imply that they have been individually inactive in attempting to address the problems in this area. The National Archives of the Netherlands, as we shall hear later from Peter Horsman, has been especially active in developing strategies and promoting cooperation in this area.

A surprising fact to emerge from the surveys is that of those six national archival institutions already managing electronic record facilities, most are doing so with resources that are extremely modest in size. Only Denmark and the UK indicate that more than 6 staff are involved in this area.

The Danish National Archives has had major additions to its staff, mostly in the area of IT and electronic records, since the first DLM survey of 1996, while in the UK a total of fourteen people are now engaged in the preservation of electronic records in the Public Record Office and the National Digital Archive of Datasets. The Public

[12] Mary Feeney (ed.), *Digital Culture: maximizing the nation's investment (a synthesis of JISC/NPO studies on the preservation of electronic materials)*, London, 1999, p.70.

Record Office has also succeeded in taking an important part in the British Government's Information Age Government strategy.

Most of the national archival institutions of the member states seem to be agreed on certain principles in relation to the preservation of electronic records. Most wish to do the job of preservation themselves. Most claim that they need additional resources to do this and that it is the lack of resources rather than any issue of policy that prevents them from doing so. Garnering resources to improve current access including, now, remote access, seems easier than garnering them to ensure access over time.

On the issue of training there was a near unanimous answer to the question as to whether current training provisions for archivists were adequate to equip them in dealing with the selection, preservation and delivery of electronic records to the user. All but two of the national archival institutions gave a resounding “no” to this question, with the exception of the UK, which has embarked on an ambitious electronic records programme, and Luxembourg, whose National Archives does not preserve electronic records.

It is appropriate, therefore, that another project to emerge from the work of the DLM process has been the development of a trans-national modular system of in-service archival training, or “E-term,” based on the successful Dutch model. This is being financed to the tune of $130,000 under the Leonardo Programme, which has as its

object the development of the European Dimension in vocational training and is specifically intended to work towards a European-wide standard for training archivists in the management of electronic records. It brings together, in the development stage, five universities and one public authority from Finland, Germany, Italy, Portugal, and the UK.

There is, of course, more happening on an individual basis among archives in Europe in relation to electronic records, but these are certainly the main threads emerging from the DLM process and from other EU-sponsored programmes and initiatives.

Freedom of Information and Data Privacy

Torbjörn Hörnfeldt
National Archives, Sweden

Torbjörn Hörnfeldt is Principal Administrative Officer of the Division of inspection and consulting at the National Archives of Stockholm, Sweden. He has been working at the Archives since the late '80s. Hörnfeldt is also coordinator of the standardization efforts of the National Archives and is responsible for developing and revising their regulations in the field of information technology.

I have been given the opportunity to talk upon the subject of Freedom of Information and Data Privacy. Those of you who have heard Swedish archivists in international settings before know that this, together with some legal issues in general, seems to be one of our favorite subjects.

At the point in time where we are now, I think that we all agree upon the fact that future society will be very different than the one we are living in today and also than anything that came before. The main deciding factor for this is, of course, the widespread use of information communication and technology, which has changed the way we, as a society in general, handle information. This new technology has given us new opportunities, as well as the possibility

to handle data about all aspects of life on Earth and beyond and, more importantly, handle data about people.

When the possibility to process, record, handle and communicate huge datasets on the most private aspects of our lives became a reality in Sweden - that was in the 60's and the 70's -, it became obvious to the public, to the political parties and, perhaps most of all, to the media, that this could represent a threat; in the early 1970's demands were raised for legislation to control the use of new technology. Maybe this is a typical Swedish attitude, I don't know, but what came to the collective Swedish mind at the time was George Orwell's phrase in "1984" about the "looming figure" of the State as Big Brother. It soon became the subject of many news items, and the debate went on into the following decade. We should keep in mind that the National Archives of Sweden, as Ken Hannigan showed in his presentation, accessioned the first electronic records already in 1970.

Eventually the legislation that was demanded came to be, with the Data Act of 1973, which solved the problem in a way that depended heavily on how the technology of the time was used. The Act mandated that no data or electronic records should be kept after the primary purpose for their processing had been reached, the reason behind it being that permanent records kept on paper did not constitute as high a risk for the privacy of the public as those which were kept electronically, and therefore able to be processed

immediately at will. There were also other parts of the Data Act, such as the one that guaranteed that once per year citizens could, if they so requested, obtain a printout of the data that any agency had about them, or the part on the mandatory routine for handling data that were deemed especially sensitive. The agency in charge of this was the Data Inspection Board, which was responsible for issuing licenses for personal data registers and for enforcing compliance with Data Act regulations. The public, though, soon showed an inclination to find new areas that posed potential threats. An example was the exchange of information between different branches of the public administration (some branch could in fact keep some data about persons and their personal phone numbers), or the telefax problem (some agency could keep fax numbers together with names of persons) and so on. As you can see, there was a certain amount of paranoia going on over this.

Now, we all recognize that data can give a complete picture of the public, and that the data on private life areas, personal relationships, etc. may be misused if they fall into wrong hands. The reaction to the use of computer processing of personal data in Sweden would seem to indicate that Swedes, like many other peoples in the world, are horrified at the idea of the State keeping records on their personal lives, but as a matter of fact this is not the case. In my opinion, one of the reasons for this is the fact that the State has been collecting sensitive personal data about individual citizens for several hundred years. In fact these data are so detailed that they are used even today

to trace genetically transmitted disabilities. Another factor that may have caused the public not to distrust the State so heavily is that the freedom of information expressed in the Freedom of the Press Act guarantees a high degree of transparency in the operations of the government and of public agencies.

How this trust has developed itself, I will try to explain now. A short and highly subjective outline of the development of this creation of trust, so to speak, would begin with Gustav I Vasa, the king of Sweden crowned in 1523 who freed Sweden from the Danish oppression, confiscated the property of all Catholic churches and monasteries, created the State Church of Sweden, and introduced rigorous legislation in the fiscal sector and in other matters. Maybe this very regime, so harsh upon the people, created the right foundation for the next step to build on. And the next step in this development was the explicit creation of the function of the archives - or, to be more precise, the *Riksarkivet* or National Archives.

Then came Gustav Adolf, during (and after) whose reign the chancellor Axel Oxenstjerna initiated the development of the structure that is still very much visible in Swedish government and public agencies. As early as 1618, Johan Jöransson Rosenhane, who succeeded to Rasmus Ludvigsson, the very first Archivist of Sweden, drafted the first instructions for the national archives. At this time, the archives of the State and church were not open to the public.

The first step in this direction was taken when the two political parties (normally referred to, in Sweden, as the "Caps and Hats") that took turns in being in power, agreed that it was necessary for the opposing party to be able to get some information and control about what the party in power at the moment was doing. Hence, the Freedom of the Press Act in 1766. The reason for this legislation was therefore certainly not to give public access to State records, but eventually this has come to be the case.

The next step in the building up of this trust happened in 1812, when in the Freedom of the Press Act explicit mention was made of free access to archival records. In my own translation from the Freedom of the Press Act, chapter 2, paragraph 4 "In every archival institution (…) everyone will be given free access to, or allowed to make copies of, every kind of records on any subject." That this paragraph and its entry into the Freedom of Press Act was influenced by circumstances in Sweden at the time, and more importantly of course by circumstances in Europe, such as the Napoleonic wars, is hardly necessary to point out. The same goes for the fact that these rights have been diminished by regulations concerning secrecy, most recently in the Secrecy Act. What is important to note is the shifting of emphasis from the need for political control to the more general citizens' rights to access documents.

If we move forward in time, we find that the first changes that deal with information technology, that took place after much deliberation,

were introduced with the Freedom of Press Act in the second half of the 1970's. It might be interesting to note that records were in some instances referred to as "electronic records," while in some others as "document records" or "document recordings". These latter definitions are a consequence of a vague analogy with conventional paper records, an issue that has caused endless discussions that are not settled even today, twenty years later. Another thing that gives rise to discussion is the extent to which the public has the right to access electronic records: only to the extent to which agencies could once process data and records, or to the extent that agencies can process data and records through the hardware and software available now? The latter option may mean that now it is possible to do much more than was ever possible, since the record's creation: even, in fact, create a completely new record rather than preserving the real, authentic one.

At this point, we can also comment that the reason for ensuring accessibility of records developed from the purpose of control and meant more than the mere right to information. This development has sometimes been termed as "the right for the public to seek knowledge in the records," rather than just information or data. The introduction of the Archives Act at the beginning of the 1990's has not solved the problem of what a record is, and in fact it uses the same definition of records as the Freedom of the Press Act. Nevertheless, even if it did not use that definition and were more specific and closer to archival theory than it was, it would not really matter, since the Freedom of

the Press Act is a fundamental law and the Archives Act is not.

The most recent element that has come into play in these matters in Sweden is the implementation of the European Union directive dealing with the privacy of personal data. This directive is considered by many, at least in Sweden, as less modern and up-to-date than the Swedish Data Act it will eventually replace in the year 2002. The Data Act, for instance, allowed for the preservation of electronic records that were no longer used for their original purpose at an archival institution. There was, in principle, nothing that defined which records could be transferred to this archival institution and be kept there. In the directive, on the contrary, the records that were created and preserved and that can be used for journalistic, scientific, and statistical purposes need to be kept. There are no provisions for the keeping of records for other purposes than these, such as preserving records to guarantee the freedom of information over time.

In the case of Sweden, though, an explicit declaration was made when we joined the European Union, that the freedom of information should not in any way be influenced or reduced. And this is also being included as part of the implementation of the Personal Data Act, that is the implementation of the European directive. Whether this will be sufficient or not in the long run is another matter.

After this short historical *exposé* of some of the developments of the freedom of information and data privacy in Sweden, it may be time to

consider the effects of the development of the Internet and the World Wide Web. While initially there were some doubts as to the use of services available on the Internet, this technology was in fact officially sanctioned, so to say, by the then Prime Minister Carl Bild when he sent an e-mail to President Bill Clinton in 1994. Whether or not President Clinton ever read the message or returned an answer is more than I know; but this message represented the starting point of a flurry of activities in the government and in public agencies. Soon after this, it became mandatory for public agencies to have an official e-mail address and there was an intense development in the field of ICT, Information and Communication Technology, in the public sector.

One of the activities that ensued from this was the setting up of a commission specifically devoted to information technology -- a commission that is still working today. Also, an informal organization by the name of Top Managers Forum was created: made up of some of the most important agencies, this body initiated a number of projects, of which I will mention a few.

One project dealt with the specification of a common platform for the use of Internet and Internet standards by public agencies, and also identified SGML - or XML as it would be today - as a suitable basic format for records that are going to be preserved. Another project dealt with questions concerning the quality of information exchanged between agencies and how to assess this quality. Yet another project

dealt with basic requirements for official websites and pages. And, finally, another project that is now being completed has further developed some components of the open electronic infrastructure for public agencies specifically using SGML/XML.

Now, has this really made any difference to the agencies or to the freedom of information and privacy of data? Well, surely today all public agencies have access to the Internet and the World Wide Web; a non-proprietary infrastructure has been developed that is based on Internet standards, which guarantees safe transfer of electronic records, and is being used by a number of agencies today; a legal information system is being created, that will make all legal documents, from the fundamental acts or laws to the specific decisions of the agencies, available to the public. This system includes the Parliament, the government offices, and over sixty public agencies.

Now finally, has this made any difference to the public and the level of their access? While the penetration of the World Wide Web has reached some two thirds of the public and its diffusion, in Stockholm, is close to 75% of all households, it is difficult to see any difference in the behaviour. Citizens still contact public agencies directly but they use the World Wide Web and its services to obtain information.

Has it made any difference to the freedom of information and to data privacy, then? Not really, I think, even though there have been some

interesting developments such as the municipalities publishing the municipal records on their web sites and the Data Inspection Board itself, which, as mentioned before, was created to uphold the Data Act and instead incidentally broke the rules of the Personal Data Act by publishing on the Web sensitive information about a court case. It is clear that the use of IT to disseminate information is highly widespread. At the same time, though, the National Archives is waiting for a decision from the Ministry of Justice regarding the possibility to publish a directory or a database of the holdings of Swedish archival institutions. We have been waiting for three years now, and still no decision has been made. In this case, the freedom of information has evidently not weighed more than the privacy of the act.

I would also like to mention that the recent developments have influenced the Ministry of Justice to such an extent that at present the Freedom of the Press Act, the Secrecy Act, and the Archives Act are all being revised. The developments that have taken place in the last year, for instance, have undoubtedly had a great influence on the Commission working on these issues, and I expect there will be several interesting developments in the field of archives, too. These may not only include the definition of records, whose problems I have already mentioned, but will surely include the important changes in the way records will be registered and described in the future, with a view to ensuring future accessibility to the documents.

In conclusion, what can we say about freedom of information and data privacy in the electronic age in Sweden? That the greatest threat may not be the "Big Brother State," but may rather come from the traces we all leave when we use the Web. And if we want to talk more specifically about freedom of information and data privacy in the context of archives in the electronic age, what can we say? If the European directive on privacy is really implemented and followed, there will be few electronic records at all. We can certainly also say that freedom of information may mean little, if anything at all, if we cannot even be sure that what we are preserving are permanent authentic electronic records.

Authenticity, Public Administration and the Private Sector in the Netherlands

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Introduction

I am supposed to inform you briefly on what is going on in the Netherlands administration, both public and private, in the area of creating, using and maintaining authentic electronic records. The Netherlands may not be the leading edge in information technology, although it is not far behind: the country has a strong reputation in administration and record-keeping, possibly partly because of having Germany as a neighbour, with its complex record-keeping systems, and model Weberian bureaucracies.

After a short view on the notion of authenticity in the Netherlands, I'll devote a few words on the increasing awareness by administrators and policy-makers of the role and risks of electronic records, and how the archival community responds to this awareness. I'll invite you to have a look at how policies and practices meet or fail to meet with

each other in day-to-day administration and public life. Finally, I'll try to draw some conclusions.

Authenticity

Likely, when one asks a civil servant or private administrator from the Netherlands about the authenticity requirements of the documents she or he deals with, one will see question marks in the eyes of the interviewee. With the exception of legal matters, authenticity is not an explicit issue in administrative operations. As a rule, officers trust the authenticity of the documents they receive and use, and they can do so because the administrative procedures enforced protect the required quality of the documents. Let me give you one example. Some time ago, a fax arrived from the United States with a copy of a letter said to have been written by the Dutch Minister of Justice. The recipient, however, did not completely trust the authenticity of the letter, and asked confirmation. Given in the hands of the ministry's chief records manager, this person immediately recognized that the letter was indeed false, because of differences in the letterhead, mistakes in the procedure of writing, and because of the signature, which, although resembling the Minister's, had been put in a wrong place. Still, even without this diplomatic analysis of the document, the registration system (*protocol, protocollo*) through which all incoming and outgoing documents pass demonstrated clearly that the letter was never sent from the Minister's bureau. Indeed, in tandem with the procedure of writing, the record-keeping system guaranteed the document's authenticity.

When I started my working life in the public service, way back in the previous century, I was not allowed to send any letter by myself -- even physically, I did not have access to the paper sheets with the office letterhead. I had to write a draft and submit it to my director, who reviewed it, eventually modified it, put his paraph, and forwarded it to the secretariat where the letter was typed and sent. The procedure protected the authenticity of the document.

With emerging technologies, such as e-mail, I can send from my own desk hundreds of documents all over the world, bypassing any kind of procedures or secretariats. Only the e-mail software shows where the message comes from, and the recipient is mostly willing to trust that what the document says has the power he or she wants to attribute to the document.

Growing awareness

There is an increasing awareness by senior management, auditors and legal officers of the decreasing quality, authenticity and reliability of electronic documents. Both government and private sector are seeking measures to improve the quality, without hampering too much the advantages of the information and communication technology. Most Dutch ministries have implemented procedures for the use of e-mail -- procedures that sometimes seem to deny the nature of the medium, but anyhow demonstrate the growing awareness about the authenticity issue.

Both the public and the private sectors spend money and energies in the development of a reliable system of digital signatures, capable of ensuring the authenticity of an electronic document. The private sector offers functional devices such as the electronic passport in order to enable safe electronic commerce.

Many of these efforts aim to have trustworthy evidence in case of legal conflicts. Under Dutch law, it is the judge who eventually decides about what is acceptable as evidence, but it is clear that documents that are capable to prove their authenticity are easily accepted. Under current circumstances of uncertainty, because of the novelty of the technology, many organizations anticipate accountability by seeking to improve the quality of the documents and the system that keeps them.

Response by the Archival Community

The archival community has recognized the potential risks of the use of information technology in the administration some three decades ago. Initially, the focus was mainly on long-term preservation, and no doubt the archivists' worries had their reason for existence. However, they did not meet the short-term needs of the administration, nor were they even recognized by decision-makers. Even a report by the Auditor General, issued a decade ago, devoted more attention to the short-term accountability than to long-term preservation requirements. Over the last five years, the archival community has

moved towards the concept of record-keeping, acknowledging the fact that short-term needs and long-term requirements were not in conflict with each other, but were heading in the same direction: preservation of authentic records. Then, again, what does "long-term" mean in such a rapidly changing environment as information technology is? US scholar Jeff Rothenberg put it as simple as this: "electronic documents last forever -- or for five years, whichever comes first."

The new direction of archival thinking, grounded on the Australian records continuum concept (a record is a record as long as it lives and its authenticity must be preserved as long as the records should live to meet organizational and societal needs), has brought archivists and record managers closer to the awareness that they share the same profession: preserving the quality of records.

Policies and Practices

A series of policies and initiatives are taken by both public and private sectors to improve the quality of electronic communications. Both sectors acknowledge the power of electronic communications. The public sector shows many initiatives in the field of electronic governance (also termed "information age government" or "government online"), aimed at improving the way through which government carries out its business and communicates with its customers (formerly subjects). The private sector, as is the case anywhere else in the world, tries hard to be competitive through

electronic commerce. Both sectors develop policies and initiatives to establish a reliable infrastructure, including standards, procedures and, eventually, software.

At the national level, the Digital Longevity programme in the Netherlands develops methodologies, guidelines and standards for authentic record-keeping, including long-term preservation. It investigates the legal impact of electronic communication and its consequences for record-keeping. Later today you will hear from my colleague Hans Hofman about long-term preservation, which is an integral part of the programme.

The private sector, in cooperation with government, also develops policies like Trusted Third Parties, an area in which also notaries (more or less comparable to North-American lawyers) try to establish a marketplace. For some organizations and individuals the preservation of authenticity is indeed a real business.

Practice

Looking at how organizations start doing their business, we may see a wide variety of applications.

- The Dutch Parliament is getting 100% digital: the assembly agenda is in electronic format and is available to members through the Parliament's Intranet. The documents to be discussed are attached to the agenda items. An increasing number of local

governments do the same for their Council meetings, even providing citizens with direct access to public documents.

- More than one million happy taxpayers submit their yearly income tax form in electronic format through a network.

- One emerging buzzword in private organizations is the integration of documents into the work processes, avoiding administrative overload.

Record Management Practice

So far, despite of the changing view I mentioned earlier, record managers and archivists have had some difficulties in catching up with changing business procedures. In anticipating electronic records, record managers invest in the selection and procurement of Document Management Systems. In the last few years, at least a few Dutch organizations have initiated a process to define requirements for record management, building on standards developed elsewhere. Recently the DoD 5015.2 standards have been translated into Dutch and published in a widespread manual for records and archives management. The Digital Longevity website also made other standards easily available, such as the Australian Standards for Records Management, and the Australian Metadata Standards. In the near future the European Union will publish model requirements for record management -- another attempt to provide record managers with the results of archival science research studies.

Yet, all of these documents should be translated -- and I do not mean in the first place translated into the Dutch language (although that is essential as well); I mean translated into the Dutch legal and societal framework.

Conclusions

There is a gap between theory and practice. Most of the theoretical concepts must be implemented through practical tools, including procedures, methods, standards and software. Moreover, emerging theoretical concepts, such as those being developed by the InterPARES project, must be implemented in education and training programmes. The use and management of authentic electronic records is a learning process, as was (and is) the use and management of paper records. The biggest difference between the two learning processes, however, is that in the electronic world we do not have seven centuries available to do our learning.

The use and management of authentic electronic records is a shared responsibility for managers, IT-people and archivists alike. But it is the archivists' particular responsibility to come up with methods and standards for the preservation of authentic electronic records, both through research and education.

The SIADE Project: A Portuguese Experience on Electronic Records

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1. CONCEPTUAL FRAMEWORK

At the beginning of 1998, in their general effort to rethink archival problems concerning electronic records, the National Archives of Portugal recognized that an intervention plan on Public Administration was urgently needed. The awareness grew that, considering the ever-growing number of requests from public agencies regarding electronic records issues and media migration, the situation would soon become unmanageable.

The SIADE project was born from a National Archives initiative that included as partner the Informatics Institute, i.e. the National Agency for the development of information science and technology in the public administration sector. Common interests and issues were immediately recognized and contacts were soon established in order

to develop a common strategy. A protocol was set and a project team created in order to coordinate and develop the project, that was named SIADE, an acronym for Archival Information Systems and Electronic Records.

2. SCOPE AND PURPOSES

SIADE's general purpose is the development of guidelines on electronic records management, although in fact it is a more comprehensive programme which incorporates several other streamlines and intends to use a broad approach to support electronic records management activities in the public administration.

According to the first timetable draft, a package of deliverables is expected to be produced by the end of 2001. They will include the project's core purpose, i.e. guidelines, but also other measures such as - where justifiable - the adoption of standards from both national and international standard agencies. SIADE is also concerned with the development of recommendations regarding legal issues related to accepting electronic records as juridical evidence. In this line of action, the team has already produced a document about a recently issued law about digital signatures and the evidence value of electronic records. Another law regarding electronic commerce and invoicing has also been issued. However, such laws need further refinement, which the team is expected to cooperate on.

The development of a conceptual model for the integration of information systems and archive systems is another goal of SIADE's, one that is planned for the last part of the project. The idea is to develop solutions for re-engineering business processes in highly automated environments, in order to comply with archival needs with the maximum cost reduction possible.

The project also considers the development, from scratch, of a new archival information system. This has particular significance considering that the Portuguese public administration is a discrete universe where highly automated environments coexist with a reduced percentage of IT integration.

Within the project, the development is also planned of a training programme that will involve universities as well as the public institutions and professional associations concerned with these issues. This is meant as a horizontal initiative, running parallel to the main project, and one that will be extended after the project's conclusion.

3- METHODOLOGY

The decision was made to adopt a pragmatic approach in order to make the actions to develop as effective as possible. A leading operative core group was created, comprised of archivists both from the National Archives and dependant services, and of information managers from the Informatics Institute. Whenever necessary, other people would be invited to work with the team on specific areas of

action. The purpose of this decision was to avoid permanent overcrowding of the team, which could eventually lead to inertia or poor motivation from people that would only have indirect interest in the programme. The initiatives for the collection of data would be facilitated by the Intersectorial Commission (a horizontal consultative agency where all ministries are represented), whose members are acting not only as intermediaries with their own ministries, but also as pushing elements whenever results are more urgently needed.

The initial project conception, as proposed by the National Archives team, consisted in an inductive approach to the real general broad scenario of different kinds of situations existing inside the Public Administration.

Everybody was obviously aware of existing problems and dysfunctions, although it was an inconsistent and unsystematical knowledge. Emphasis was put on retrieving as accurate information as possible, so that an effective approach could be devised to tackle the real problems acknowledged.

Information was collected through both a top-down and a bottom-up approach. In order to have a broader view, a general picture of the universe under examination had to be obtained first. The next step would then be breaking up the intervention into specific organic segments that would respond to the need for more accurate and complete information.

Three chronologically and formally distinguished steps were adopted in order to survey the production and preservation of electronic records, with a view to obtaining significant qualitative and quantitative information about the universe studied.

Another reason for the development of different and complementary initiatives was the perceived lack of valid interlocutors inside the Public Administration. There are very few archivists integrated in active records management, and IT people are usually unaware of the archival perspective. So, there was a potentially high risk to obtain scarce (or the wrong kind of) information.

The methods adopted were:

i. A specific but brief questionnaire about electronic records and electronic record-keeping systems. It took the form of an addendum to a more vast and general inquiry developed every two years by the Informatics Institute regarding IT technologies. The main purpose was to gather information that would lead us to the more fully automated agencies and that would potentially produce a larger amount of electronic records. It would also get the team to acquire a macro-perspective of the real condition of the public administration and therefore of functional areas that might present more problems on this matter.

ii. At the same time the development of interviews was decided upon, that would be submitted directly to producer agencies. An inquiry template, or more precisely a script protocol, was conceived and developed. It was quite a large vertical interview, that included several areas spread over different topics:

- the identification of where information was gathered about the institution and the people to be interviewed;
- the IS/IT organization and resources (this area was not very extensive, as information was available through the Informatics Institute);
- the Record-keeping System, divided into several sub-modules: general overview; records capture; storage and preservation; appraisal; controls;
- a subgroup about training; and finally
- an evaluation item in which interviewees were asked to expose their main concerns and expectations about record management related activity.

This kind of approach appeared to be the only one that, although time-consuming, would enable us to get more complete information. Furthermore, using this format rather than others seemed a better choice because of the anticipated knowledge of difficulties on functional, terminological and conceptual levels that inevitably would rise on a normal inquiry. On the other hand, also the multiple points of view about electronic records and records management - which exist in all sectors of the Public Service -, as well as the non-existence of standardized functional

and documentary procedures, made us choose the interview format rather than a mailed questionnaire with closed questions.

The target agencies were chosen according to criteria derived from the information gathered through the first inquiry. Interviews were performed essentially by archivists, who spoke to employees at different levels. The agencies belonged to areas related to Health, Finance, Justice and Social Security. This was however the first selection, the inclusion of other sectors remaining an open option as the need to extend the range of action increases.

iii. Initially, a third inquiry was also considered, that should have been launched after completion of previous actions. However, this phase has been put off to some time after the issuing of the guidelines. It will then be used to obtain feedback about the product effectiveness and to acknowledge points that will need further refinement. This inquiry will be constructed according to the experience acquired from previous initiatives. It will be much shorter, with closed questions formulated using a carefully studied vocabulary in order to prevent inaccuracy in the answers. Information about expressions, concepts and misguided ideas perceived during the interviews were compiled so that comprehensive annotations could be included to clear up any doubts on the purpose of the questions.

4. FIRST CONCLUSIONS

The results from both the first inquiry and the interviews were submitted to statistical treatment, both by the Informatics Institute and by the National Archives; the results indicate some general conclusions that will be used to draft the guidelines. Some of the results can be summarized as follows:

i. **Record management is not fully recognized as an organizational function**

   This function is usually not considered important or specific enough to have organic autonomy. Only some of the respondent agencies associated the archival function with information management, which indicates, together with the lack of autonomy of record management services, that archive management is usually connected with inactive records.

   However, inside most agencies the existence was identified of latent structures, i.e. of organic segments that, although in an informal way, ensure that part of the electronic records management process is carried out.

   It is acceptable to say that from the examples observed one can not strictly speak of a formally recognized function, but rather of a package of procedures whose completeness, standardization and systematization varies a great deal from agency to agency.

2. **Lack of archival control is not found exclusively in electronic records management and production**

Unmanaged records production is a current practice in the Portuguese public administration. This is clearly seen in instances such as the regular absence of fundamental management tools such as classification schemes or appraisal tables. Therefore, a lack of archival control over electronic records in a given agency does not necessarily mean that the agency excludes them deliberately from its record-keeping system.

3. **Electronic records are not considered as principal documents, and get almost always converted to hard copy**

   In spite of the broad dissemination of IT for information management, archival requirements do not take it into any account. We realized that agencies deal with plain information and not with archival information, and there is a largely spread misconception about what an "electronic archive" really is. The concept of electronic record management is being wrongly developed particularly in the areas of digitization, where no strategic planning for the process was observed (including migration). The fact that most agencies have their records printed, and that no strategies for preservation are adopted, might indicate that it is still in their conventional records that institutions seek evidence for their transactions.

4. **Different functional requirements between Information systems and Archival systems are not recognized**

   The record-keeping function applied to electronic records usually depends on the IT sector, with absolutely no recognition of the

implications from the archival point of view of records production and management in a digital environment.

The use was seldom detected of legislative and standard sources, or even of internal guidelines, to support record production and management. Where they exist, classification plans do not usually reflect the organic or functional structure of the agency.

E-mail remains completely unmanaged as a digital record, and it is systematically printed out.

5. **There is no concern about continuing access to electronic records, which are considered as ephemeral**

   The non-definition of strategies to keep continuing access to electronic records, and the proliferation of proprietary software indicates that immediate administrative and technical issues are the only concern for organizations. No metadata is defined; no stabilization action on information is developed. Also, there was no evidence of any compliance with citizens' access rights. The access is naturally provided, but always to the digital records' hard copy. Multimedia and dynamic records are not fully captured, most of the movement and sound information being lost. Dynamic medical image, for instance, is not captured as such. Only frames of still images defined by protocol medical examination are kept. This has a direct influence on raising costs whenever a second opinion is demanded and also has grievous consequences in case of legal litigation.

6. **Organizational and administrative structural problems exist that hinder the implementation of correct record-keeping**

   One instance of this was the fact that in some Database Management Systems the data dictionary is very rarely created or managed. Although it is generally admitted as good practice, in fact it is seldom managed effectively, and no responsibilities for this are assigned to its management. One of the reasons proposed for this situation was that the job of data administrator does not represent an attractive position inside agencies.

7. **There is no perception of compound and complex documents - such as web pages or databases - as having archival features**

   Websites have in the last two years developed significantly and in some cases a lot of transactions take place through them, particularly in finance and tax payment.

   They are in most cases developed by outsourcing companies that usually have no concerns about structure and content preservation.

   As far as databases are concerned, they support the largest part of information systems, although they are never managed from a perspective that includes archival requirements. This is the case, for example, with the central information system of accounting and human resources management.

   However, in this system actions are being developed regarding appraisal and selection by a team in which members of SIADE are represented.

5. EXPECTED OUTCOMES FOR THE YEAR 2000

For the prosecution of the goals set at the beginning, that prioritize the guidelines issue, three aspects have to be considered as essential for the development of the programme:

i. To launch the production, edition and public discussion of guidelines

The structure of the guidelines, although not yet fully developed, was planned to be divided in several parts, each focussing on a particular subject. Although a general and complete plan was established, the parts might be physically and chronologically separated. Such a solution would permit to start issuing technical advice, which is perceived as an urgent need. Regarding content, the guidelines are expected to offer a pragmatic approach to several areas according to a slightly theoretical perspective that takes due account of archival principles and information systems. Some practical generic information, such as available standards, best practices, laws and supporting agencies, will be gathered as well and offered as a useful tool for agencies to develop their record-keeping systems.

The guidelines should be structured into these main topics: Contextual and environment information; Archival and information systems; Conception of electronic records management systems; and Specific issues, in which several subjects will be addressed that seem more problematic, like e-

mail management, appraisal procedures, migration, media transfer, websites management, etc.

Further topics might be included at any time, depending on the feedback received by the team from public institutions.

A draft of the first part is expected to be ready by the beginning of March 2000, and it will be disseminated at selected public institutions.

ii. To promote the visibility of the project

The need to develop the visibility of the project is due to difficulties experienced by the team to make the idea of the program accepted through the Public Administration. There is a generalized misconception on record-keeping functions as well as archivists tasks that prevented - or raised considerable obstacles to - the implementation of planned actions. To this purpose 3 issues should be developed: a) web page conception; b) dissemination of templates to all public agencies requiring input and suggestions about the work developed by the project; c) diffusion of information to agencies that perform horizontal functions inside the Public Administration and also to consultative institutions such as the Superior Council of Archives.

iii. To develop cooperation with other national and international R&D teams active in this field

Developing close contacts with research and case experiences that are being or have been developed at international level is seen as

essential. In this context, the InterPARES project is certainly an outstanding partner, especially considering its large research scope and the range and level of international expertise put together.

Italy's legislative framework for electronic documentation

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The purpose of this brief paper is to illustrate the radical changes underway in Italy in the sphere of the Public Administration under the impact of a wide-ranging process of modernization stemming from the adoption and pervasive spreading of computer technology.

In the space of six years a series of provisions have established a legislative framework endowing electronic documents with full juridical validity. The foundations and conditions are therefore in place for such documents to be validly created, circulated, and preserved.

The point of reference for this legislative process is the AIPA (Authority for Information Technology in the Public Administration),

which has either directly issued or largely inspired many of these provisions within the framework of a broader reform of the Public Administration aimed at improving its efficiency and effectiveness, cutting costs and streamlining and simplifying bureaucratic procedures.

The AIPA was set up by a legislative decree (Decree n. 39 of February 2nd, 1993), with the specific goal to support and assist the different branches of the Public Administration in the gradual rationalization and simplification of the administrative activities. Section 1 of article 7 empowers the AIPA "to establish technical provisions and criteria for the planning, design, implementation, management and maintenance of the automated information systems of ministries as well as their interconnection, quality and associated organizational aspects; to establish technical criteria for the security of such systems." The AIPA therefore can establish provisions for the Public Administration and has, as such, issued several technical rules, which are discussed below.

First of all, however, it should be pointed out that the AIPA has launched a substantial series of technical and organizational initiatives in the area of records management, with particular respect to the automation of document registration, digital signatures, and substitutive storage on optical media.

Intense debate has accompanied the drafting and issuing of these provisions, and a broad spectrum of problems has been addressed, ranging from the very general to the highly technical and specific. Key roles have been played by the unstoppable evolution towards an increasingly global "information society," the increasingly pervasive spread of both computer technology and the Internet, the development of e-commerce, the right to privacy and personal freedom, etc. These issues are also addressed at the international level and are under discussion especially in the other countries belonging to the European Union. An example of this is given by the meetings of the DLM Forum, the last of which took place in Brussels in October 1999.

The forms of communications and transactions carried out in the "global society" partly or exclusively by means of computer technology make it essential to address the problem of adjusting national and international legislation so as to cover electronic documents and the conditions needed to ensure their effective and reliable creation, circulation and preservation. After a series of preparatory provisions, the basic law of reference in this field in Italy was issued on November 10th, 1997. It is the Decree of the President of the Republic n. 513, entitled "Regulation of criteria and methods for the creation, storage and transmission of documents by means of information technology in accordance with section 2 of article 15 of law n. 59 of March 15th, 1997" (also known as Law "Bassanini 1"). This introduces into Italian law certain principles and criteria of exceptional importance and innovative implications that can be fully

gauged only after a long period of experimentation in the years to come. Article 15 of this law, which is designed to pursue the reform of the Public Administration and simplify administrative procedures, states that records, data and documents created by public agencies and private persons by means of computer or Internet-based systems or contracts drawn up by such means, as well as their storage or transmission by means of computer systems, shall be legally valid and relevant for any purpose of law.

The innovation does not lie solely in the assertion of homogeneous criteria and principles for the private and public sectors, thus breaking with a tradition of rigorously separate compartments. In fact, the law integrates fully into the context of measures designed to simplify relations between the state and the citizen, to reduce the expenditure of public offices, and to improve the services given by the Public Administration.

The law setting up the AIPA (39/1993) had already asserted the principle of the legal recognition of the validity of documents produced and managed by means of information technology. Article 3 states that "the administrative documents adopted by all the branches of the Public Administration are normally created by means of computerized information services," which must obviously be designed in compliance with requisites of security and reliability.

These provisions and the subsequent laws illustrated below are designed to achieve ambitious objectives of general interest such as the streamlining of administrative proceedings through the rationalization of procedures, the reduction of the enormous costs borne by the Public Administration for recording and storage of paper-based documentation, and the reorganization of the Public Administration system in order to give concrete and feasible implementation to the citizens' right of access to administrative records, in compliance with another important law (Law n. 241, of August 7th, 1990).

Once the general validity of electronic documents as primary and original information generated by means of computer had been asserted, it became necessary to regulate the application of this principle by means of the provisions laid down in the above-mentioned article 15, with particular reference to the technical and juridical conditions that allow to ascertain the author of an electronic document.

The method used to identify the author of an electronic document with certainty is based on the tools of modern cryptography and consists, as is generally known, in applying a form of encryption to the content of an intelligible document and thus transforming the text into a sequence of characters that are not immediately comprehensible. Only those in possession of the key are in a position to decipher the content through the inverse process of decryption. The

use of the key on the part of the intended recipient of the coded document involves knowledge and application of the cipher whereby the jumbled characters can be assigned a value and meaning other than that immediately apparent. This system has been widely applied throughout the world in systems for the transmission of military information, and makes it possible not only to preserve the confidentiality of the information, but also to ascertain the identity of author of the message (as only the person possessing the cipher key could have applied it to the document before transmission).

The recipient of an electronic document therefore knows that the person sending the message is in possession of the cipher key and hence is the originator of the information.

The juridical effects of the system provided for by decree 513/97 are considerable. If an electronic document fulfills the technical requirements laid down in said decree, and is signed by its author with a digital signature (article 10), it has the status of a private written document (art. 2702 of the Italian civil code); when it constitutes a reproduction of another document, it fulfills the requisite of written form and has the same probative validity as the originals on paper (art. 2712 of the Italian civil code).

Once the problem of the unequivocal identification of the author is settled through the adoption of the digital signature system, the document created on electronic media has the value of an original

document, to which the law attributes full juridical validity. For all purposes envisaged by the laws currently in force, the placement of a digital signature replaces (art. 10) the use of seals, stamps, perforations and countersigns of all types whatsoever.

Finally, the electronic copy of an original document created on paper can, for all legal purposes, take the place of the document from which it is drawn (art. 6) if issued by authorized public depositories that guarantee its correspondence to the original by affixing their own digital signature, thus mirroring the provisions of articles 2714 and 2715 of the Italian civil code for documents created on paper. It is the task of the decree to be issued by the government in compliance with article 3 of Decree n. 513 to establish the technical procedures whereby public officials can declare the correspondence of copies to the original. The decree issued by the Council of Ministers on February 8th, 1999 lays down technical rules for the creation, transmission, preservation, duplication, reproduction and validation, also in temporal terms, of electronic documents in accordance with section 1, article 3 of the Decree n. 513.

These provisions define in great detail the procedures for the application of the digital signature and possible "temporal stamps," the characteristics of the certificates guaranteeing their validity, the procedures for the certification of the cipher keys used, and the basic prerequisites for bodies undertaking the activities of certification. We are now awaiting a circular from the AIPA laying down procedures

for the submission of applications for inclusion in the public list of certificates. Once this has been issued, the legislative conditions for the implementation of the system will all be in place.

Even before these provisions, steps were taken a few years ago towards recognition of the juridical validity of documents created on electronic media in connection with provisions for substitutive preservation, thus making it possible to preserve certain types of document in electronic form (essentially as images recorded on optical media) rather than on paper or other media. Law n. 537 of December 24th, 1993 asserts that "the obligations of preservation and presentation of documents for administrative and probative purposes envisaged under the current legislation are to be understood as fulfilled also when use is made of optical media" in accordance with specific technical requirements that were later (July 1994) issued by the AIPA. These provisions remained substantially within the context of simple substitutive storage through the reproduction on a different medium of pre-existing documents created in paper form in accordance with the same conceptual model as the provisions for disposal of microfilm (albeit with all the substantial differences and difficulties implicit in the use of high-tech media).

A further stage in the process of storage of documents on optical media came with the AIPA resolution n. 24 of July 30th, 1998, entitled "Technical regulations for the use of optical media." Article 1 provides definitions of the terms employed and "Explanatory notes"

are attached at the end of the resolution. First of all, the provisions contained in the resolution replace the previous norms of 1994 on the substitutive storage of documents on optical media. They also define an overall framework of norms regarding electronic storage of electronic documents of all types. Reference is in fact made to this resolution in article 61 of the technical regulations (contained in the decree issued by the President of the Council of Ministers on February 8th, 1999) regarding the storage of electronic documents. The resolution provides for the use of the digital signature as a tool to validate all the stages of the storage process for individual documents and sets of documents.

The provisions contained in the resolution of July 1998 also govern the types of media that can be used and their characteristics, even though control over the medium is no longer the key element as regards the preservation over time of the validity of the documents recorded on them. A central role is instead played by the mechanism of the digital signature, which is used through precisely regulated procedures both as a guarantee that the documents stored cannot be altered and as a means of identification and assumption of responsibility on the part of those undertaking the different and successive operations of storage. Finally, adoption of the digital signature makes it possible to provide for transmission of the documents stored.

I shall now examine the provisions issued for the registration and management of the documents of the Public Administration as part of the overall effort to assist and support public bodies in the progressive simplification and rationalization of management activities. The provisions were again issued by the AIPA with a view to implementing an intersectorial project of strategic importance for the Public Administration as a whole. The computerization of registration procedures and the management of all public offices documentation must be seen in connection with the creation of the RUPA (*Rete Unitaria della Pubblica Amministrazione,* Unified Public Administration Network). With the RUPA, every branch of the administration will shortly be able to make its information available through standardized applications within an overall cooperative framework.

Among other things, the circulation of information within the RUPA will have the task of ensuring full access to the records and documents of the Public Administration in compliance with Law n. 241 of August 7th, 1990, whose incomplete application is also connected with the failure to make systematic use of computer tools for document storage and retrieval.

All this took concrete shape in the Decree of the President of the Republic n. 428 of October 20th, 1998, entitled "Regulations containing provisions for the management of computerized registration by the branches of the Public Administration." This

decree touched upon a fundamental aspect of the activities of the Public Administration, in that registration is the nerve centre for all the flows of work both between and within the various ministries. This issue has therefore fundamental importance with respect to the reform of Italy's Public Administration system as a whole. The decree seeks to foster the gradual replacement of the paper-based register of documents in all the offices concerned, beginning with the central ministries, which had hitherto been governed by the Royal Decree n. 35 of January 25th, 1900. Provisions are thus made for a system based on modern information technologies, making it possible to record the paper-based originals in digital form and transmit them via computer networks. The transmission and exchange of electronic records in their original format over the RUPA and through the use of electronic registration systems will avoid duplication and the accumulation of useless paper copies while fostering the gradual transformation of the paper-based records of the Public Administration into automated information systems offering high levels of security and reliability.

The decree includes provisions for the creation of special "services" to provide unified and coordinated management of documentation. Article 2 states that "each administrative branch shall identify within its own structure the offices to be taken into consideration with a view to the unified and coordinated management of documentation for large-scale, homogeneous organizational areas, ensuring uniform criteria of classification and storage as well as internal communications between the areas themselves." As regards the

documentation to be preserved, preservation schemes are to be drawn up together with classification and current management schemes. For documents destined for permanent preservation, reference is made to the archival laws currently in force. Finally, information connected with the computerized register is regarded as an integral part of the system whereby documentation is organized for the purpose of storage on optical media.

Attention should be drawn to the provisions laid down by section 2 of article 12 in connection with the need to place the registration service under the control of an officer "in possession of suitable professional qualifications or technical archival expertise acquired through training schemes in accordance with the procedures laid down by existing legislation." All this provides support for the efforts now being made by the Archives Administration to develop a new professional profile or rather profiles for inclusion in national collective contracts for civil servants. The goal is to make provision throughout the Public Administration for State archivists to act as record managers or archival operators after suitable training in both archival science and the use of modern technologies. Such personnel would thus be able to make their own contribution when information systems are being created for a public structure and to communicate with the other professionals whose employment is made necessary by the use of information technology.

To this end, the Directorate General for the Archives is working on a radical reform of the schools of archival science located all over Italy. The goal is to establish three different types of university short-term courses (2 to 3 years) and three different types of long-term ones (4 to 5 years). On the one hand, this will ensure up-to-date training for those called upon to tackle the massive series of records from the past, who will be able to master and employ technologies ensuring an increasingly satisfactory response to the demands of users and researchers. On the other hand, archivists with responsibilities in managing the flow of documentary material will be endowed with the skills necessary to give them an active role that is in no way subordinate to other forms of professional expertise. Finally, a specific but non-specialized long-term course will provide suitable training for those who are to be involved in the computerized registration and classification of documents in the archives of public and private bodies.

I should like to end by drawing your attention to the directive issued in this connection by the President of the Council of Ministers in 1999, which develops further the core aspects of Decree 428/1998 and provides further impetus towards this process and the implementation of the entire project involved in the computerized management of documentation.

It is estimated that this system concerns over 10,000 organizational units within the Public Administration and will prove useful with

respect not only to the managing of the flow of work in the offices, but also to the external transparency and use for purposes of management control.

Authenticity of Electronic Records – The UK Approach: Information Age Government

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Ian Macfarlane is the Head of Policy and Projects for the UK Public Record Office's cross-government activities on records' management. He is the manager of the Electronic Records from Office Systems (EROS) Programme, aiming to ensure that the increasing number of electronic documents created across government, where they are of long-term value, are managed according to best practice and are available for future access. He represents the UK Public Record Office in the DLM Committee of the European Union, in the ICA Committee on Electronic and other Current Records and in the InterPARES International Team.

The vision of the UK Government's programme for Information Age Government is modernized, efficient government, alive to the latest developments in electronic business, and meeting the needs of citizens and businesses.

The goal is to make it possible for citizens and businesses to conduct business with the government electronically. Because this depends on the electronic records behind the facilities, there is a spur to a formal approach to ensuring the authenticity of the records. And, I am glad to be able to say, the management of electronic records has been made

an integral part of the UK Government's programme for Information Age Government.

Some key commitments in the Information Age Government programme are:

- Electronic transactions will be made available for citizens and businesses to conduct all types of business with government.
- Evidence-based policy-making. Policy-making is to be based on information available across government organizations. This will depend on the accuracy, authenticity and reliability of electronic information for the cogency, clarity and persuasiveness of its arguments.
- Rapid deployment of IT for Information Age Government will lead to even more dependence on effective electronic creation/access.

The 'value-added' of records will increase as the contents of electronic stores become much more usable. We need to ensure, however, that the qualities that make them records are not lost in a welter of electronic information. Electronic records will be a foundation of effective and accountable government, but will still need to be managed as records.

There are targets for electronic transactions to be made available in stages by 2002 (including 90% of routine purchases by government) and 2005 for 100% of transactions (that is all transactions will be

available to be carried out electronically). And there is a target for electronic records. By 2004 all newly created public records are to be electronically stored and retrieved.

Government organizations cannot afford to 'wait and see' but must plan for and develop infrastructure to manage records while there is still time to make a difference.

Legislative, regulatory and policy changes also need effective records management. Managing freedom of information (FoI), data protection and electronic communications will need an integrated approach. More inter-departmental working will mean more exchange and sharing of records. Evidential qualities of electronic information will be just as important and must be managed. Electronic records need the same qualities as conventional ones - authenticity, reliability and accountability - to obtain the same end result but will need different means to ensure it.

Electronic communications legislation, due to be passed in summer 2000, is intended to create a legal framework for the use of electronic signatures so that people can be sure about the origin and integrity of communications.

All types of electronic signatures will be usable for authentication and will be legally admissible in Court. Examples are:

- Cryptographic codes, biometrics

- Plastic cards and passwords
- National Insurance Number and memorable data for low-risk transactions.

The overall aim is to enable paper and electronic transactions to be equivalent.

Authenticity, however, needs to be continuous from the creation of records to and through preservation.

Authenticity = initial authentication
+ maintenance of authenticity during storage
+ special measures for maintaining authenticity across transformations

At the Public Record Office, we have a current operation with a procedure:

- Accept the assurance from the supplying department that the records are authentic.
- Add a digital signature to whole databases – this is an integrity check
- Documents are transformed into read-only formats
- A British Standards Institution (BSI PD0008) code of practice is applied. This is essentially a quality procedure that creates a continuous audit trail of actions on the records and shows that the actions were supervised and carried out successfully.

The procedure will be made more sophisticated when the electronic communications legislation comes into effect and will include the ability to provide certified authentic records where the authenticity can be demonstrated.

The challenges are immense:

- Archives, government organizations and IT solutions providers need to work together to implement sound systems and procedures to maintain authentic records
- We need to achieve the ability to preserve electronic records permanently
- Organization-wide culture changes have to be put into effect.

Technology Vendors and the European Marketplace: Notes of an Italian Observer

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Maria Guercio is currently responsible for the international activities of the Central Archives of Italy, with special reference to the European Union and the Council of Europe. She was also a member of the Commission that most recently produced the new legislation on the matter of electronic record management in Italy. She has been Associate Professor at the University of Urbino since 1998.

Introduction

I would like to explore the relationship between the information technology sector and the public sector in Europe in the recent past and how it might develop in the future. My main interest is in the effort of the Public Administration to capitalize on information technology in order to make work processes more effective and efficient while still safeguarding certain traditional values such as protection of the cultural heritage. I will focus particularly on the perspective of public sector users of information technology, for I draw upon my own experience of several projects in Italy and in European Union circles to cultivate a better environment for building

electronic record-keeping systems that meet both business and cultural needs.

To begin with, let me look at the Italian context. The Italian legislation governing electronic record-keeping in public agencies is in fact very advanced. It might even be too advanced in the sense that it dictates that all public agencies should implement electronic record-keeping systems by January 2004, including the use of digital signatures and other specifics. The Italian Authority for Information Technology in the Public Sector is pushing national and local agencies to integrate information technology into all their business and documentary activities. It is also making huge efforts to push the marketplace to provide products adequate to the new legal requirements. So far, it has not been successful in this effort, for two reasons. Firstly, there is often little chance to influence decisions made at the centre, since the European IT industry is either a direct branch plant of some multinational corporation or simply adopts or adapts software and hardware produced elsewhere. Secondly, in some European countries standards and requirements only exist at a very general level, while they do not exist at all in the European Union - the very body that might be expected to have greater influence than any one country.

The bodies of the EU, such as the European Parliament and the European Commission, are more concerned with achieving the political goal of universal access to information technology. They do

not focus enough on technical aspects of the question, with the possible exception of the area of interchange of documents among administrations in the IDA programme, on the one hand, and the DLM Forum, a special body of representatives of European National Archives, on the other. For instance, the E.U.'s Information Society Forum, a consultative body of over 120 experts, has paid little attention to the issues of electronic record-keeping or to the reliability and authenticity of records in electronic form. Nevertheless, lack of attention to the details of the matter has not prevented the various jurisdictions in the EU from bringing down new laws and policies to prod administrations into the electronic age. In the usual European way, the law will spawn requirements and standards, but it remains to be seen to what extent the industry will respond to this new legal and regulatory regime. Some of the signs are not encouraging.

As an example, I well remember attending a sales pitch in Rome in 1996 by a representative of one of the largest international firms in the technology sector. He was speaking about his firm's new application for record management. He regarded the requirements for the integrity of records as constraints on the application's efficiency in retrieving and manipulating documents. He argued that the efficiencies brought about by adopting the application would save enough money to cover the costs of any possible litigation over the integrity of records. What a short-sighted perspective, I remember thinking. Organizations such as banks, insurance companies, and pharmaceutical firms, and of course public agencies too, cannot open

the door to automation without the certainty of maintaining their accountability through the records they create and keep, particularly as records play a vital role in the civil law system of Europe.

Recent Italian experience illustrates another aspect of the problem. In Italy, according to a law passed in 1993, all public agencies have to have IT specialists on staff, whose authority is strong and well defined in the legislation. While the appearance of IT units in the administration has reduced suspicion towards technological innovation, a strongest resistance has occurred on account of the documentary heritage. IT specialists and archivists concerned with protection of the documentary heritage have not cooperated easily, with the result that projects for transforming record-keeping have stagnated or broken down. This sad situation has come about in large measure because the IT specialists cannot understand archival requirements and archivists have not yet characterized them in terms that the IT world can appreciate and act on. The impasse cannot be resolved without the definition of standards, procedures and guidelines that need to be articulated and adopted at the national, European, and international levels. These requirements are usually ignored by the technology industry. For years, vendors have sold public administrations projects and products that are not really useful for solving their documentary problems, however much they might have introduced them to get some of the benefits of using computers in the workplace. To overcome these difficulties and achieve our aims, we need both a theoretical and practical approach in order to

define and design the set of basic functional requirements for the creation, keeping, and preservation of records in electronic form.

This symposium is an opportunity to reflect on the status quo and provide a stimulus for further investigation and effort to resolve the problem. I would like to discuss three aspects:

- the nature of automation in the public sector;
- the role of standards and their influence on the software industry;
- the initiatives of the EU, in particular the "DLM message to industry."

The Nature of Automation in the Public Sector

The history of automation in the public sector in Europe, not unlike that in much of the world, has been anything but a happy one. I know about the European experience mostly from by Italian standpoint, but our experience is not very different than that of other countries of the EU. Legal and regulatory rules to address the problems associated with implementing automation of work processes are not more than a few years old, usually not more than two or three years old. For a long time, the public sector was not seen as attractive by the IT industry, although it was quite clear that, like the private sector had done before it, also public administrations were poised to implement information technology throughout their operations. For instance, the EU aims towards the day when citizens will be able to use computers to conduct their business with public agencies. As the DLM 1999 follow-up identified, these changes affect three sectors of users:

- information-handling professionals, such as administrators, archivists, IT specialists;
- information users, such as business process managers, knowledge workers, and service deliverers; and
- members of the public and private sector that conduct business with government.

As the DLM Forum 1999 Final Report also recognized, there has been a shift from concern about hardware to concern about software issues, from the physical components of systems to their functionality, as well as to the rules and procedures for services and organizational solutions. It is also true that the current picture is one of fragmentation of the automation landscape, even within the same agency or organization. The Forum identified a common core of issues to be addressed in regard to record-keeping in the electronic environment. They are:

1. the need to set out functional requirements for software
2. longevity
3. re-use of information
4. open standards and specifications vs. proprietary formats
5. multilingual and multicultural issues
6. multimedia integration
7. public key infrastructures
8. support for mark-up languages
9. industry codes of practice for areas of concern

I will come back to these issues later to analyse them, but first we must examine why there has been so much fragmentation and failure in past attempts at introducing automation in the public sector.

Two approaches have been followed in the past. The first is an integrated approach. Hardware and software providers would present a series of options to a public agency, but whatever choice the agency made tied it to the vendor or vendors it chose. The advantage is that the whole of the agency used the same hardware and software. This tended to be the practice in the naïve beginnings of public sector automation. The second is the differentiated approach, in which attention is given to the special need of the client, who ends up, though, being at the mercy of the vendor. This approach responds to the particular functional and organizational specifications of the automation project, with an emphasis on the need to involve and train the user as the project progresses. In this scenario, what has often happened is that different offices of the same agency ended up with rather different, and incompatible, systems. Consequently, there was often a multiplication of

- the physical components of the system
- the local networking
- the services acquisition process
- the interfaces that must be integrated or converted
- the effort needed to maintain local systems
- and the need for external training courses for staff.

In these circumstances the systems cost more and are less effective, with loss of quality and control. Many agencies experienced exponentially increasing costs, with no concomitant reward in improved capacity or capability for work. In the record-keeping sphere, all these developments created a host of problems, even beyond the ones related to the preservation of the so-called legacy systems. In a country like Italy, automation tended to occur outside the traditional record-keeping environment. The conservatism of record-keepers did not mesh well with the entrepreneurial zeal of vendors to sell their wares. Hence, we are today at the point that I mentioned earlier: the two sides are poised to end their stand-off by adopting a standardization strategy.

The Role and Development of Standards in the Records Management Area: The Initiative of the European Union

Standardization in the automation process is an international phenomenon and a continuing activity[1]. In the records management area, the standards developed so far are not well accepted by IT industry. Industry, as exemplified in a 1996 IBM report entitled "Living in the Information Society," aims to promote "the best and most affordable network computing products and service." That is, it aims at affordable, easy-to-use products, without any real attempt to create and follow standards. In Europe the role of the EU is vital in a

[1] See Wolf Buchmann, "Standards and Archives," *Janus* 1999.1, p. 40. European standards are generally based on ISO standards, except when ISO standards are not available.

sector like that of records management, where a single standardization strategy could play a unifying role and expand the influence of small national markets. To this end the 1999 DLM Forum proposed the development of a Reference Model for Managing Electronic Records in the Public Sector. It concluded that, while it is the responsibility of information professionals to specify their needs, it is up to industry to provide software solutions following well-articulated standards. The DLM called on industry across Europe to exploit the field of electronic documents, record management, and digital archiving as a new viable market. Industry should:

- participate actively in the debate on functional requirements for electronic records;
- involve itself in close cooperation with the archival community to improve products and open new business opportunities;
- provide software that supports internationally-recognized standards;
- contribute actively to multi-disciplinary efforts to set up and implement training programmes for public sector administrators, archivists, and other information specialists;
- facilitate the exchange, the preservation, and the re-use of content created and administered by users;
- develop software to open standards rather than promoting its own proprietary formats;
- agree on interchange standards, base encoding standards etc. for non-English character sets, and inform customers how to configure products to allow such interchange to happen;

- improve integration of all media types;
- assist the public sector in ensuring the readability of different systems over time; and
- support mark-up languages like XML, developing a code of practice to address such issues as allowing research on software without incurring liability and recovery of obsolete software for use by information professionals.

Conclusion

Does this message have any possibility of becoming effective, or is it a naïve attempt to call upon business partners to attend to their moral obligations? I have no answer. If I consider my Italian experience, I am not optimistic. Vendors are not yet prepared to see the value of working towards goals that serve a wider public good of protection of the integrity of electronic records and documentation of all kinds that will be part of the future cultural heritage. Still, perhaps they can be pushed and prodded by concerted efforts on the part of users in the public and private sectors who must first recognize their own needs, articulate them, and insist upon them being met.

Both laws and standards can be a powerful influence on industry, but only if they present a reasonable, persuasive and realistic option for industry. This is true also in the area of long-term digital storage, that is the subject of the InterPARES research. We know that the weak and divided voices of consumers led to all kinds of confusion in the creation and keeping of electronic documents. The aim of

InterPARES, i.e. asking the right questions and answering them with detailed recommendations on the requirements for preservation of authentic electronic records for the long term, holds out the hope that we will not witness the same failure again.

Problèmes posés en France par la conservation des documents électroniques

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National Archives, France

Christine Pétillat entered the French Archives Nationales *in 1974, as an assistant in the Centre of contemporary archives; in 1978 she took over the position of Archivist of the Ministry of social affairs and eight years later was appointed Archivist of the Prime Minister services. From 1989 to 1995 she was responsible for coordinating the work of archivists in the different ministerial departments. She is currently the Director of the Centre of contemporary archives, a position she has held for five years.*

ABSTRACT[1]

The French National Archives began addressing the issue of long-term preservation of electronic records some twenty years ago. The preservation activity is conducted under the guidance of archivists who represent the National Archives within government agencies. Their presence has allowed for the analysis of the electronic systems used by the government organizations, as well as for the development of CONSTANCE, a conservation and preservation programme for records generated electronically (1981). A collaborative team of archivists and computer scientists, supported by the Ministry of Culture, has accomplished the following:

- the collection of more than 6,000 statistical files and permanent registers generated and maintained by various departments (e.g.

[1] This abstract in English was prepared by Marta Maftei, graduate research assistant, InterPARES project.

Institut National des Etudes démographiques), as well as cumulative databases (e.g. *Institut National de la Météorologie, Institut National de la Propriété Industrielle*);
- the development of a complex method related to these files, capable of processing any kind of documentation, of any nature;
- the permanent partnership between the archivists and the creators of records to ensure that the preservation process is initiated as close as possible to the moment of creation;
- the identification of migration as a preservation strategy; two migrations have already been carried out (the 1996 migration to optical disk, although quite difficult, has been useful for establishing migration procedures, such as integrity control methods, identification of changes generated by the new technological context, etc.);
- the investigation into appropriate archiving methods for the preservation of the questionnaires from the Census 1999.

However, the issues of diversity and quantity of electronic records are not adequately addressed. France played an avant-garde role with the creation of the Minitel system, but now the effort is concentrated on the progressive, massive migration to Internet of documents preserved on Minitel. This effort is coordinated by a governmental programme, controlled essentially through an inter-departmental committee, that will provide better access to public services while contributing to the de-centralization process. Some of the achievements are:

- the presence of Intranet within each department of Government;
- on-line accessibility of official publications (*Journal Officiel*)
- on-line availability of administrative forms.

Unfortunately, these are not programmes of great interest to French archivists. Despite their presence within the public services, and despite an archival legislation enforcing preservation for all media, the issues relating to electronic records are rather neglected. The recently appointed Director of the *Archives de France*, Philippe Bélaval, has launched an awareness campaign on the preservation of electronic records. Guidelines relating to archiving methods have been published. They concern record creators, information technology experts and archivists. Bélaval also supports the participation of French archivists to international meetings in order to integrate our pragmatic approach within a theoretical framework.

Le souci de la préservation à long terme des documents électroniques est pris en compte depuis une vingtaine d'années aux Archives

nationales de France. Il faut savoir que notre pays présente sur le plan de son organisation archivistique une spécificité: celle de la présence de représentants des Archives nationales au sein des différents départements ministériels. Telle est, en effet, la solution qui a été retenue pour permettre un archivage harmonieux en l'absence de toute tradition de gestion des documents dans notre administration qui se montre même singulièrement négligente sur ce point. Du fait de l'installation en permanence d'agents des Archives nationales dans les services publics centraux, il a été donné d'y observer les premiers développements informatiques et de chercher assez tôt à trouver une organisation appropriée pour la conservation des documents générés par ces systèmes.

Après une période d'étude méthodologique effectuée avec l'aide d'un organisme gouvernemental, le CESIA (Centre d'études des systèmes d'information des administrations), un programme baptisé CONSTANCE (**CON**servation et **ST**ockage des **A**rchives **N**ouvelles **C**onstituées par l'**E**lectronique) a été mis sur pied en 1981 et a été confié, au sein des Archives nationales, au Centre des archives contemporaines de Fontainebleau. Une équipe d'archivistes et de documentalistes a été constituée qui a reçu l'aide d'informaticiens et de matériel technique fournis par le Ministère de la Culture auquel les Archives nationales sont, dans notre pays, rattachées.

Pour résumer les activités de cette équipe d'une dizaine de personnes depuis sa création au début des années quatre-vingt on dira:

- qu'elle a opéré la collecte de plus de 6000 fichiers composés des enquêtes statistiques ou registres permanents tenus par l'Institut national de la statistique et des études économiques (INSEE), par l'Institut national des études démographiques (INED) ainsi que par les divers services statistiques ministériels auxquels se sont ajoutés quelques bases de gestion ou bases de données cumulatives (Météorologie nationale, Institut national de la propriété industrielle).
- qu'elle a développé une procédure sophistiquée de rassemblement et traitement de la documentation (c'est à dire des informations de toute nature: contextuelle, de contenu, technologique) associée à ces fichiers.
- qu'elle a tenté d'instaurer un partenariat suivi et une démarche de préservation des archives électroniques le plus en amont possible dans les services producteurs dont le Comité d'archivage mis en place à l'Institut national de la statistique et des études économiques représente l'exemple le plus éclairant.
- qu'ayant choisi la migration comme stratégie de conservation, elle a déjà réalisé à deux reprises ce type d'opération. La première fois, en 1996, dans des conditions pénibles puisque l'élément déclencheur du changement de support technologique n'a pas été la volonté des archivistes mais le souhait du Ministère de la Culture de diminuer le coût de maintenance des appareils qu'il affectait au programme. Malgré cet environnement psychologiquement difficile, cette migration vers le disque optique numérique des fichiers conservés jusqu'alors sur des

bandes magnétiques a été accomplie dans un contexte méthodologique précis ainsi qu'avec un encadrement dans le temps assez strict. Cette expérience a été riche d'enseignement en dépit de certaines mauvaises surprises (il est apparu que les fichiers que l'on croyait avoir été mis à plat ne l'étaient pas vraiment étant donné le caractère propriétaire des matériels - français - employés pour les gérer). Cela a offert l'occasion d'appréhender en vraie grandeur les procédures indispensables en cas de migration (vérification de l'intégralité des données migrées, modifications de l'information de nature technologique associée aux données, etc.). On a même eu l'opportunité d'apprécier l'efficacité du travail ainsi réalisé quand, très vite, le choix imposé par le Ministère de la Culture (disque optique numérique) s'est révélé peu approprié obligeant à mener à bien, en 1998-1999, cette fois avec souplesse et simplicité, une nouvelle migration du disque optique vers des DLT 4000.

- qu'après son expérience essentiellement fondée sur les fichiers et bases de données gérant des données structurées, elle se trouve aujourd'hui amenée à réfléchir aux conditions d'archivage du recensement de la population effectué en 1999 qui a innové en procédant par numérisation des questionnaires remplis par les enquêtés. La préservation à long terme des images des documents présentant la population française à la fin du deuxième millénaire constitue actuellement le chantier essentiel de l'année à venir.

Aussi tangibles et encourageantes que peuvent sembler les étapes franchies par le programme du Centre des archives contemporaines, elles n'en apparaissent pas moins aujourd'hui comme nettement insuffisantes.

On ne parvient pas en effet à répondre aux multiples questions soulevées par la multiplication et la diversification des documents électroniques dans notre administration. Cette inflation, maintenant patente, tient évidemment aux avancées technologiques considérables obtenues au cours des dernières années. Elle découle également du programme lancé par le gouvernement pour accélérer l'entrée de la France dans la société de l'information que Lionel Jospin, notre actuel Premier Ministre, a annoncé dans un discours remarqué en août 1997 et mis en place à partir du 1er janvier 1998. Il convient de rappeler que la France avait à son actif la création et la propagation réussie du Minitel mais que cet outil, conçu sur un bas débit, s'avère désormais dépassé. Le Premier Ministre a donc fait part de sa résolution d'amplifier la mutation technologique sinon les Français risquaient, en s'accrochant au réseau national du Minitel, de se laisser grandement distancer. L'accent a donc été mis sur la nécessité d'une migration progressive sur Internet du vaste patrimoine constitué sur Minitel pour laquelle il a été demandé à l'administration de montrer l'exemple. En parallèle, des adaptations du droit utiles en matière de protection industrielle, de lutte contre les contenus et les comportements illicites ont été engagées.

L'exécution de ce programme gouvernemental avance à grand pas sous le contrôle du Comité interministériel pour la société de l'information, grâce à l'impulsion de la Mission interministérielle de soutien technique pour le développement des nouvelles technologies de l'information et de la communication dans l'administration ainsi qu'avec l'aide financière du Fonds pour la réforme de l'Etat. On comprend l'entrée dans la société de l'information comme s'inscrivant dans l'ensemble du processus commencé depuis le début des années quatre-vingt pour rénover notre administration et moderniser les relations qu'elle entretient avec ses administrés. Les progrès de l'informatique et des télécommunications apportent indéniablement des perspectives particulièrement prometteuses pour les transformations en cours, qu'il s'agisse d'accroître l'efficacité du travail des fonctionnaires, d'appuyer la décentralisation de la décision publique, de dégager de nouvelles modalités pour l'accès des citoyens à l'administration.

Il suffit de citer les objectifs déjà atteints:

- l'installation de réseau interne (Intranet) dans chaque ministère.
- la numérisation et la mise en ligne sur Internet des données publiques (Journal officiel et bases de données juridiques).
- la délivrance en ligne d'informations permanentes sur les droits et démarches des citoyens.
- la possibilité d'obtenir par téléchargement les rapports de littérature grise du gouvernement.
- les sites Internet créés par l'ensemble des ministères.

- le développement des formalités à distance par la mise en ligne de tous les formulaires administratifs et la propagation des échanges de données informatiques.

Il faut avouer que, malgré le réseau des représentants des Archives nationales en place dans les ministères, ce programme gouvernemental a été lancé sans aucun contact avec les archivistes, ce qui montre qu'il n'y a pas de conscience profonde du rôle des Archives de France. Il y a bien quelquefois dans le développement des applications énoncées plus haut l'insertion d'un concept d'archivage mais il s'agit, chaque fois, d'une conservation à moyen terme. L'idée même qu'il y a besoin d'une préservation permanente dans certains cas ne semble pas être acquise. Il est clair que les pratiques admises pour les documents traditionnels sur support papier ne viennent pas à l'esprit quand il s'agit d'électronique. En bref, on doit constater que la définition des archives mentionnée dans la loi sur les archives et qui inclut tous les supports n'est pas véritablement comprise.

L'attitude des archivistes eux-mêmes, face à ce domaine nouveau de leur intervention, n'est malheureusement guère différente. Mis à part les quelques personnes impliquées dans le programme Constance, les archivistes français s'avèrent trop peu attentifs aux problèmes posés par les documents électroniques ainsi que le prouve la faible quantité de littérature consacrée à ce sujet dans nos organes professionnels. Pourtant la propagation des nouvelles technologies et de leurs

applications touchent à l'heure actuelle le pays entier, ses structures centrales comme les services administratifs locaux, le secteur privé etc. L'intérêt porté au plus haut niveau sur les activités déployées par le programme Constance est resté limité et prudent au point qu'au moment de la migration imposée par le Ministère de la Culture il en a même été envisagé l'arrêt.

Dès sa nomination, en juillet 1998, comme directeur des archives de France, M. Philippe Bélaval s'est préoccupé vivement de cet enjeu et a désigné auprès de lui un chargé de mission pour suivre ce secteur. Il a créé un comité chargé d'impulser des travaux dans ce sens. Ainsi, en même temps qu'on a élevé le problème au niveau de la direction des Archives de France, qui a pour mandat d'animer l'ensemble de la communauté archivistique, il a été jugé indispensable de faire appel au maximum de coopération pour profiter de toutes les connaissances existant dans ce domaine.

Le directeur des Archives de France, qui a choisi d'assumer lui-même la présidence du groupe de travail ainsi constitué, y a sollicité l'entrée d'informaticiens, de spécialistes de normalisation, de responsables d'organismes gouvernementaux et de membres d'autres professions confrontées à des problématiques similaires (bibliothécaires par exemple). Il a donc élargi le cercle de réflexion restreint auparavant à un très petit nombre de responsables des Archives nationales et du Ministère de la Culture pour en faire un lieu de concertation interdisciplinaire.

La priorité a été donnée à la sensibilisation des archivistes d'une part et des administrations productrices d'autre part. Sur la base des compétences accumulées par l'équipe Constance, il a été rédigé, en vue d'une mise sur Internet, un document destiné à informer en premier lieu les archivistes non initiés mais aussi tout public intéressé par la sauvegarde de documents électroniques. Dans le prolongement, il est actuellement préparé un guide de conseils pratiques sur l'archivage des fichiers ou bases de données statistiques visant à donner les renseignements adéquats aux trois acteurs impliqués dans le processus: le service producteur, le service informatique producteur et l'archiviste du ministère. Le but recherché est d'améliorer les conditions de collecte et de traitement de ce type de documents électroniques que l'on s'estime, au bout de vingt ans, capable d'appréhender convenablement et de dégager, de cette façon, du temps pour s'attacher aux autres catégories moins connues et non maîtrisées.

Dans la phase nouvelle ouverte depuis 1998, il a été également décidé de s'ouvrir davantage aux expériences étrangères et de participer de manière plus accentuée aux travaux internationaux (CIA, DLM Forum européen). Ma participation au projet InterPARES prend naturellement place dans le cadre que je viens d'exposer. Participer à ce projet de recherche s'avère très fructueux dans le contexte de sensibilisation des administrations et des archivistes actuellement en

cours en France qui nous oblige à conceptualiser les méthodes au départ bâties avec un certain pragmatisme.

A cet égard, la part prise aux sessions du groupe de travail sur la préservation me semble dores et déjà enrichissante pour moi-même qui ferait de mon mieux pour communiquer à mes collaborateurs cet apport. Ainsi, les tâches opérationnelles que nous menons sur le terrain bénéficieront de plus de rigueur; de mon côté, j'ose espérer que la réflexion menée au sein du groupe InterPARES trouvera également à se nourrir de nos démarches et tâtonnements quotidiens.

A Cultural Perspective on Electronic Records: The Dutch Approach

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Introduction

As one in a row of representatives of archival institutions of different European countries, I could just say we face the same problems and are searching for the same solutions and hope to find these partly in the InterPARES project. Although true, however, that would probably not give you a real view on what is happening in the Netherlands. Peter Horsman has already offered an overview of the developments within the public administration, so I will try to present the cultural perspective on electronic (or, better, digital) records.

The issue of authenticity in a digital environment does not represent a problem only for archival institutions, but for all organizations preserving digital information or objects, such as libraries, museums,

audio-visual institutions, the pharmaceutical industry, etc. It is the very nature of digital information that is the cause of it.

Archival institutions are confronted with the emergence of digital records, which are no longer physical entities like paper records. They are fragmented into at least five components. These components are a datafile, a medium on which the file is stored, a software application to read (or interpret) the file and reproduce the record, hardware (including the operating system), to run the software and, last but not least, documentation that enables people to understand the interrelationship between these components, know how the datafile can be read and understand what the record is about. The last component contains in other words metadata.

The issue here is the quickly changing technology that endangers the existence of digital information for more than one generation of technology, no matter what kind. According to Moore's law, every 18 months a new generation of technology appears, that doubles the capacity in speed and/or storage, and makes the previous one actually obsolete.

In order to maintain our intellectual capital (i.e. records) we need to keep up with these changes, or we shall not be able to read it and use it any more. In changing the technology used to interpret the digital information, however, we risk losing another essential characteristic or requirement, namely the authenticity of digital records, i.e. the

guarantee that the record we see on the screen is the one that was once created and used in a business process. New versions of software applications or storage formats, for instance, combined with lack of standardization, can influence the form and structure of the record and as such diminish or even destroy its authenticity.

So, the challenge we are facing is exactly the theme of today's Symposium: ‘How do you know it’s the real (or authentic) thing?’. The “thing” in this project is a record, or rather an archival record, as having continuing value and as part of cultural heritage. This record that we want to preserve is not, as we said, a physical entity, but an intellectual or conceptual ‘thing’ (=record), the one that should be presented on the computer screen and that we as human beings can understand. That is what should be preserved and is the challenge we face.

Since there seem to be no physical boundaries in a digital environment, as is the case with paper, it will also be difficult to establish what the record embraces. All sorts of new types of records will emerge, such as compound or hyperlinked documents. Where are their boundaries? In order to find them we have to look at the business process in which they are created and used. This context determines in fact the boundaries of the records created by it.

The objective we want to achieve is the long-term preservation of (archival) digital records in an authentic, usable and understandable

way. That is quite a phrase with many terms that actually need some explanation. What do we mean for instance by “long-term,” or by “preservation,” or “digital records,” or “authentic, usable and understandable?” It would take too long to explain all this here, but a good understanding of these issues is needed to find the right solutions. We said we want to preserve (digital) records in an intellectual sense (as we can understand them), as they were when they played a role in the business process (authenticity), over time (in a usable way and despite changing technology).

How do we want to achieve that in the Netherlands?

The Dutch Approach

In 1991 the Dutch National Archives started thinking about the issues around digital records, supported by a report of the National Court of Audit concerning the lack of attention to the management of electronic records. As a cultural institution responsible for preserving records with archival value, the National Archives became aware of the risk that records in a digital form could be lost, unless appropriate measures were taken. A task force was installed to identify the problem and come up with a policy to deal with it. After a couple of years it was also clear that the preservation of digital records is not a problem of archival institutions alone, but in fact the responsibility of all government organizations as record-creating bodies. So, in 1996 a program called ‘Digital Longevity’ was set up together with the Ministry of the Interior, which is responsible for coordinating

information management within government. As such this program embraces the whole records life cycle, or better, continuum and it concerns all levels of public administration, including provinces and municipalities.

The reports published and the activities that have accompanied the programme until now have contributed to creating, among senior managers of government organizations, records managers, responsible authorities and - although, remarkably enough, to a lesser extent - of archival institutions, a growing awareness of the consequences of the use of information and communication technologies on record-keeping and subsequently of the challenges they face when carrying out their business processes, as well as of their being accountable.

While the Ministry is responsible for coordination of information management, and more specifically of record-keeping or records management within government, the National Archives is responsible for long-term preservation and legislation in this field. In both these areas, the National Archives should provide the direction for dealing with the issue of long-term preservation. Regulations should set out the requirements, while the building of a repository should provide the means or infrastructure for the preservation of archival records.

Based on the Archives Act of 1995, a Regulation on the Arrangement and Accessibility of Records (both paper and digital) should be issued, with further requirements not only on the arrangement and

accessibility, but also on the authenticity of archival records. The regulation has not been perfected yet, and will probably be issued some time in 2000. It concerns both paper and digital records. The main issue in drafting the regulation was the articulation of authenticity and the identification of the metadata in relation to digital records.

One of the articles formulates, with respect to authenticity, that it should always be possible to establish for each record '*the content, form and structure at the moment it has been received or created by an organization (in conducting its business), to the extent that the content, form and structure had to be recognizable for the accomplishment of the task or action involved'*.

As such, the regulation establishes a measure point for identifying the authenticity of a record. It also implies that the form, structure and content of the record should be described. That applies especially to digital records, that are as such volatile and intangible. The draft regulation also identifies what metadata should be kept. Apart from this kind of metadata, the regulation requires metadata about provenance (contextual information), about the arrangement and about the technical origin of the record. It is necessary to know, for instance, with what application the records are created and on what platform, so it will always be possible to reconstruct the original situation -- not in a physical sense, but by providing information about it.

The second main area of the draft regulation concerns the accessibility of (archival) records. As such it articulates that records have to be retrievable, available, usable and understandable at all times. It requires again different categories of metadata that will allow this, such as administrative metadata, intellectual metadata, and metadata for discovery.

Finally, the regulation contains requirements for preservation. It prescribes the format in which the datafiles should be transferred to an archival institution. Two formats have been chosen, i.e. Portable Document Format (PDF) and Extensible Mark-up Language (XML). Although they are not yet ISO standards, they are widely used and seem to support rather well the requirements concerning authenticity.

One of the main topics of discussion is the quest for solutions concerning the preservation of digital information or records. As a consequence of the approach adopted in the Netherlands, this is not seen as a problem for archival institutions only, but also as an aspect of record-keeping within government organizations. Digital records always require measures for maintenance, even when they have to be preserved for shorter periods, such as 5 or 10 years.

The idea of the Dutch programme, of course, is not to solve this worldwide problem on its own, but to try to contribute to a solution through research in this field and to acquire at least some experience. In doing so a two-track approach has been adopted, that envisages

both the development of a testbed on the one hand and the building of a digital repository at the National Archives on the other[1].

The above-mentioned draft regulation requires in fact that the National Archives should be able to acquire and maintain digital records. No digital records have been transferred as yet, but some government organizations intend to do so at short notice. However, because there are no digital records yet at the National Archives, the awareness is still rather low and limited to the notion that they exist. As a consequence there is no proper procedure for transferring digital records, nor is there any feeling of urgency. This is supported by the fact that also within government organizations awareness is rather low and management of digital records is mostly outside the scope of records management departments. The tendency is still to print digital records (e.g. e-mail messages) on paper, so they can fit into the existing traditional procedures.

The Projects

Both projects mentioned above have started in 1998. The project for building a digital repository or preservation function at the National Archives is called the *Repository 2000* project.

The objective of this project is threefold:

- to enhance awareness at the National Archives;

[1] For further reading, see my paper called *'Shooting at a moving target. The development of a digital repository at the National Archives of the Netherlands'*,

- to acquire practical experience with preservation and management of digital records;
- to build a repository that actually can preserve (simple types of) digital records, and that can also serve as a demonstrator that helps thinking about the subject.

For these reasons, the preservation system built should in the first phase be simple and small. A full-blown system, if even imaginable, would be too much at this moment. The types of records that can be dealt with in this first version of a repository are word-processing documents, e-mail messages, simple spreadsheets and simple databases.

As I said, there is the intention to preserve text documents in PDF and/or in XML, and spreadsheets and databases in XML. Besides these formats, documents should also be preserved in their native format.

Apart from building the system that should enable the maintenance of digital records, this project includes issues such as:

- procedures for transfer and ingestion of digital records;
- defining metadata that are required in order to guarantee authenticity, accessibility and management of the records;

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presented at the Second DLM Forum in Brussels, October 18, 1999 and available at the website of DLM Forum: http://www.dlmforum.eu.org/program/index_en.html

- dissemination of knowledge about the consequences of managing digital records;
- establishing responsibilities and preparing the organization for the management of digital records.

At this moment the project is in the designing stage. The design should be finalized in March 2000 and is based on the reference model of the Open Archival Information System (OAIS), a model that is seen in different communities, such as scientific data, libraries, and archives, as the leading model in this area[2]. Although not completely sufficient for maintaining and managing digital records, it provides a solid basis for further design.

The other project is the development of a testbed. It is not a project of the National Archives alone, but also of the Ministry of the Interior. The reason for this is that the issue of preserving and maintaining digital records is not limited to the archives and that the results should be available for all government organizations at all levels, including provinces and municipalities.

The objectives of this project are:

1. to identify the most viable preservation strategies (e.g. emulation, migration, XML) in relation to the different types of digital records. The requirements for authenticity are leading in this

[2] Version 5.0, see http://www.ccsds.org/RP9905/RP9905.html. The reference model is in the process of becoming an ISO standard.

search. The underlying hypothesis is also that there still is no single preservation strategy that meets all requirements;
2. to provide a testbed for experimenting based on research questions from practice.

The project should also draw upon experiences made elsewhere, e.g. in the national archives of the US, Sweden, Finland etc. With respect to the emulation strategy, collaborations will take place with the Universities of Michigan (USA) and Leeds (UK), that have set up a similar project on emulation (called the CAMiLEON-project[3]) and, if possible, also with European collaboration initiatives.

In the fall of 1999 we have started a tender for developing and supporting the testbed. The project is scheduled for three years and the development of the testbed will actually begin in the fall of 2000.

This project is based on a report that RAND Europe made for the National Archives. In order to get an overview of the state of the art concerning available preservation strategies, establish the boundaries of the project and make a global design of a preservation system, RAND Europe was asked to conduct a study. The report provides an overview of the existing preservation strategies, a model for a generic preservation process of digital records, a strategy for preserving

[3] For details, see http://www-personal.umich.edu/~cacl/IDLI/camileon.htm

digital records, and a proposal about how to proceed[4]. The author, Jeff Rothenberg, is known as a strong proponent for using emulation for preservation of digital records (or objects) in an authentic way.

It is obvious that the timetable of both projects is not synchronous. Because of the European tender, starting with the testbed project will take longer. The experiences with the development and building of the digital repository, however, could and probably will help in developing and using the testbed. Among the benefits already obtained, more people at the National Archives are getting involved and there is a beginning of common understanding among them on the issues around digital preservation. The procedure for transferring records to the National Archives, for instance, needs to be completely revised in order to enable it to deal with digital records as well.

Both projects have an innovative character and address specific issues with respect to organizational, archival and technological aspects, that will offer also a view of what the transition from paper to digital record-keeping and archiving requires.

Summary

To sum up, we could say that in the Netherlands the first steps have been taken to ensure the authenticity of digital archival records. In the

[4] The report is written by Jeff Rothenberg and Tora K. Bikson and can be found on the website of the 'Digital Longevity' programme: http://www.archief.nl/digiduur. Although the website is in Dutch, the English title is: *'Carrying digital records in an authentic, usable, and understandable way through time'*.

draft *Regulation on the Arrangement and Accessibility of Records* an article has been included that provides a description of what is meant by authenticity and requires that it be preserved. Moreover, the development of a first version of a digital repository or archival system for preserving digital records has started. Both issues have a strong relationship with record-creating organizations or the public administration in general. Since digital records are created and, when they are appraised as having archival value, should be kept and managed until transfer, the first measures should be taken at the phase of creation.

This leaves the possibility open for the future that digital records will not be transferred any more to an archival institution. Even in that case measures should be taken to ensure authenticity.

Nonetheless, there is still a long way to go. Expertise and knowledge in this area are still very scarce and there is a strong need for training. But as long as within archival institutions awareness is at a rather low level, a long time will be needed before the gap between what is needed and what is available is bridged. Until then, implementation will be slowed down and this situation could represent a risk for the success of these projects.

The implementation of the repository, on the other hand, should provide practical experience and make the issues around digital preservation visible to archivists. Until now most of what happened

was rather theoretical and difficult to understand for many archivists, who are used to work with paper records. Probably, as was said before, a completely different kind of organizational structure will be required for dealing with or for preserving digital records, that will emerge alongside existing archival institutions that deal with paper archival records. Whatever will happen, there is a need now to deal with the management and preservation of digital records appropriately.

Another issue already mentioned is the fact that the National Archives in the Netherlands does not have the pretension to solve the problem on its own. The innovative character, the scarcity of expertise and experience require cooperation, nationally and internationally, and in this respect the participation in the InterPARES project is one of the clues to success.

E-mail Litigation Wars: the U.S. National Archivist Strikes Back

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For more than a decade, the Reagan, Bush, and Clinton Administrations have been engaged in a series of courtroom battles concerning the issue of continued maintenance and long-term preservation of electronic records generated in federal agency office environments. At its core, the basic dispute has involved whether federal agencies are required under the U.S. Federal Records Act ("FRA") to make special efforts to manage the *electronic* versions of

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This paper represents a revised version of a presentation made at the UBC Symposium titled "How Do You Know It's The Real Thing: Authentic Records in the Electronic Age," held on February 19, 2000. I wish to thank Luciana Duranti for her role in sponsoring my participation in this forum. The views expressed in this paper are the author's alone, and do not necessarily represent the views of any

the records that agency employees create every day using available desktop, proprietary e-mail and word processing applications. Recently, however, a measure of finality has been achieved as to the state of what the law requires, based on the legal holding of an appellate court in *Public Citizen v. Carlin*[2]. There, the judiciary ultimately sided with the Archivist, in a court ruling which has an impact on the daily record retention and disposition practices of every federal agency in the U.S. government[3].

As is also true for the private sector, during the last decade the government has experienced an explosion in the use of desktop e-mail. For a large cabinet department such as the U.S. Department of Health and Human Services, an estimated 1 million e-mail messages are now exchanged each day[4]. Given that there are over 300 reporting agencies responsible for the development of record schedules authorized by the Archivist, the numbers of e-mail messages exchanged per year approaches the tens of billions[5]. Although not all

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agency or component of the U.S. government.

[2] 184 F.3d 900 (D.C. Cir. 1999), cert. denied, 120 S. Ct. 1267 (2000).

[3] *See* 44 U.S.C. 2901(10) (defining "federal agency" for purposes of the Federal Records Act as including all Executive branch components, as well as portions of the Judicial and Legislative branches).

[4] See Declaration of Neil J. Stillman, Deputy Chief Information Officer for HHS, dated March 17, 1998 (filed on behalf of the government in *Public Citizen v. Carlin*, No. 96-2840 (D.D.C.) (available from author).

[5] *See* Jason R. Baron, "E-mail Metadata in a Post-*Armstrong* World," presented at *Metadata '99: Third IEEE Computer Society Metadata Conference, Bethesda, Maryland, April 6-7, 1999*, available at the following Internet address: http://computer.org/conferen/proceed/meta/1999/papers/83/jbaron.html.

e-mail messages constitute federal "records" as defined under the FRA, nevertheless, the size and scope of e-mail, with related word processing applications, presents a serious challenge to the government's collective ability to archive records in record-keeping systems, regardless of the medium employed. It is against this backdrop that a decade-long series of cases brought by the public interest sector has been played out.

In *Armstrong v. Executive Office of the President*[6], plaintiffs (consisting of public interest groups, historical and library associations, and two individuals) challenged the ongoing record-keeping practices of the Reagan and Bush Administrations with respect to the preservation of electronic mail in the National Security Council and the Executive Office of the President ("EOP"). Plaintiffs initially were successful in obtaining two temporary restraining orders that prevented the destruction of two discrete sets of PROFS and other back-up tapes from the Reagan and Bush Administrations, respectively[7]. Additionally, on the merits, the district court in *Armstrong* held that "print-to-paper" policies then in place, which informed NSC and EOP employees that any records created on their respective e-mail systems should be retained solely in hard copy,

[6] 810 F. Supp. 335 (D.D.C. 1993), *aff'd in relevant part*, 1 F.3d 1274 (D.C. Cir. 1993).

[7] *See Armstrong v. Executive Office of the President*, 807 F. Supp. 816 (D.D.C. 1992). All back-up tapes preserved in *Armstrong* were from components of the Executive Office of the President, including, in addition to the National Security Council, the EOP's Office of Administration, the Office of Management and Budget, the Office of the U.S. Trade Representative, and others.

were legally insufficient under the FRA[8]. Affirming this result on appeal, the higher court reasoned that paper and electronic versions of the same e-mail record were at most "kissing cousins," where the hard copy versions lacked important, meaningful and fundamental information retained on the electronic information system, such as the full names of senders or recipients of the e-mail, the date and time of transmission, or whether an acknowledgement of receipt had been received by the sender[9] (the court vividly described e-mail records as having been "amputated" in their hard copy form[10]). Ironically, by the time of these decisions on the merits, EOP components had, in large part, migrated to a different e-mail proprietary application which, unlike the original PROFS e-mail system, was set to default to printing out virtually all relevant "transmission and receipt" information[11].

Armstrong left open, however, the exact means by which the government must manage the "extra" information (including metadata) routinely included in or associated with the electronic versions of records residing on a given electronic mail system. In

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[8] *See* 810 F. Supp. at 341.

[9] *See* 1 F.3d at 1277, 1283, 1284-87.

[10] *Id.* at 1285.

[11] Unlike on the PROFS system, hard copy printouts obtained from EOP's all-in-1 e-mail system include the full names of the sender and all recipients, even in cases where the originator of an e-mail message identified recipients cryptically or only by nickname (such as on "cc" copies for a previously designated personal group or distribution list). *See generally Armstrong v. Executive Office of the President*, 877 F. Supp. 690, 715 *et seq.* (D.D.C. 1995).

August 1995, the Archivist promulgated two sets of guidance which purported to clarify the *Armstrong* holding in a manner which could be reasonably applied throughout the federal government. These consisted of a) revised regulations covering the retention of e-mail[12], and b) a revised General Records Schedule 20 ("GRS 20"), covering "Electronic Records," including the disposition of electronic mail and word processing documents[13]. GRS 20 allowed for the disposition (*i.e.*, deletion) of e-mail records from desktop PCs *provided that* (i) a copy (with any attachments) had been preserved in a paper, electronic, or microform record-keeping system, and (ii) the copy contained all relevant transmission and receipt data as set out in the accompanying NARA e-mail regulations (and the *Armstrong* holding itself)[14]. Similarly, for records created on word processing systems, GRS 20 allowed for disposition from the desktop PC once a record copy had been placed in a paper, electronic, or microform record-keeping system[15].

Subsequently, many (but significantly, not all[16]) of the same plaintiffs present in *Armstrong* chose to litigate the legal propriety of GRS 20 in the *Carlin* lawsuit.

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[12] *See* 63 Fed. Reg. 44,634 (Aug. 28, 1995), *adding* 36 C.F.R. 1234.24.

[13] *See* 63 Fed. Reg. 44,643 (Aug. 28, 1995).

[14] *See id., Category 14.*

[15] *See id., Category 13.*

[16] The Society of American Archivists issued a statement on May 3, 1997, stating that plaintiffs' Complaint in *Public Citizen v. Carlin* was "a seriously flawed document . . . reflect[ing] a basic misunderstanding of fundamental archival

Plaintiffs were successful before the district court in advancing two propositions:

- First, the district court accepted the argument that the Archivist lacked the authority under the FRA to promulgate a general records schedule, the scope of which went beyond routine categories of housekeeping or administrative records[17]. Thus, GRS 20 could not validly cover e-mail and word processing records, the subject of which run the gamut from exchanges on the most trivial of governmental actions (*e.g.*, routine personnel, travel, or procurement requests) to the most sensitive subjects involving matters of national security considered at the highest levels of the U.S. government (*i.e.*, true "program" records of agencies)[18].
- Second, the district court accepted the proposition that electronic records had greater value than paper counterparts, both because they can be searched, manipulated and indexed while in electronic record-keeping systems, and because of the possibility that electronic versions differed with paper counterparts, thus

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principles and practice." *See "Archival Issues Raised by Litigation: Challenging General Records Schedule 20,"* available at the following Internet address www.archivists.org/governance/ handbook/app_k.htm#Litigation.

[17] The relevant portion of the FRA (specifically, the Records Disposal Act of 1943, as amended in 1945), authorizes the Archivist to promulgate schedules governing the disposition of records of a "specified form or character common to several or all agencies" that do not after a specified period of time "have sufficient administrative, legal, research, or other value to warrant their further preservation by the United States government." 44 U.S.C. 3303a(d).

[18] *See Public Citizen v. Carlin*, 2 F. Supp.2d. 1, 12 (D.D.C. 1997).

> holding that such records should not be arbitrarily subject to disposition by means of a blanket, one-size-fits-all general schedule[19]. For these main reasons, in October 1997 the district court issued a declaratory judgment invalidating GRS 20 *in toto.* By doing so, the court essentially required that agencies must proceed to individually revise existing schedules or create new ones which incorporate a separate disposition category for the electronic versions of e-mail and word processing records, for all affected records series.

What occurred next arguably involved the most delicate aspect of the litigation. After the government had filed an appeal from the Carlin decision, plaintiffs returned to district court, alleging that the Archivist improperly was continuing to advise agencies that GRS 20 remained valid disposition authority, notwithstanding the district court's prior ruling. The relatively esoteric legal question turned on whether the Archivist should or should not have treated the court's prior declaratory judgment as an injunction running to the entire government. As a practical matter, the stakes were huge: if plaintiffs succeeded in convincing the district court that by virtue of the nullification of GRS 20, agencies who were nonparties to the suit nevertheless should consider themselves without authority to delete e-mail and word processing from desktop PCs, then normal government operations could not be continued. Such a "no delete" rule would either have the effect of slowing or shutting down the government's

[19] *Id. at 14.*

use of office automation systems, or, as a next least worst alternative, would require that each agency begin a program of maintaining thousands or tens of thousands of back-up tapes, pending the development and approval of new schedules. For example, the Department of Defense alone is responsible for 17,000 records schedules submitted to the Archivist, all of which would need to be reviewed and revised had the district court's decision been so interpreted.

In the end, the district court blinked. On the two separate occasions in 1998 where plaintiffs pressed forward with a request that the Archivist notify the government that no authority existed for the deletion of e-mail and word processing records, the district court nevertheless allowed the Archivist to represent that agencies could continue to follow their present disposition practices pending further developments in the *Carlin* lawsuit itself (including a decision on appeal)[20]. The decision on appeal subsequently mooted any further consideration of how the district court might have chosen to proceed to enforce its original declaratory judgment, had plaintiffs continued to prevail.

In August 1999, the U.S. Court of Appeals for the District of Columbia reversed the district court's decision in *Carlin*, holding that the Archivist had the authority under the FRA to issue a general

[20] *See Public Citizen v. Carlin,* 2 F.Supp.2d 18, 22 (D.D.C. 1997); *Public Citizen v. Carlin*, Order of October 3, 1998 (D.D.C.).

records schedule which in relevant part pertains to electronic mail and word processing records. In doing so, the appellate court rejected both of the district court's major conclusions. First, the Court of Appeals held that the actual text of the FRA, including the phrase that the Archivist could promulgate general records schedules "of a specified form and character common to all federal agencies," did not *on its face* preclude the issuance of general record schedules on matters beyond what are thought of as "housekeeping" or "administrative" documents[21]. Second, the appellate court took issue with the reasoning of the district court with respect to the value of electronic records in live desktop applications and systems, stating that:

> [plaintiffs'] argument ignores th[e] obviously material difference between the value of records that are part of an agency's centralized record-keeping system and the value of those that are accessible only by searching a particular personal computer[22].

The Court further held that GRS 20's e-mail provisions incorporated the *Armstrong* holding, and that the schedule's wording with respect to word processing records is properly interpreted as requiring that all information that made part of a record be preserved in a record-keeping system, in a manner that obviates the plaintiffs' and district court's concerns regarding completeness[23]. The court specifically went on to note that the question of requiring agencies to convert to

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[21] 184 F.3d at 903-04.

[22] *Id.* at 908, citing the Archivist's explanation as contained in the preamble to the final GRS 20 schedule, 63 Fed. Reg. at 44,646.

[23] 184 F.3d at 909-10.

electronic record-keeping was an issue "for the Congress or the Executive, not the Judiciary, to decide."[24] On March 6, 2000, the U.S. Supreme Court denied plaintiffs' petition for *certiorari*, thereby ending a decade of contentious litigation concerning how the government is to manage and retain its e-mail and word processing records[25].

In ratifying the Archivist's 1995 revisions to GRS 20, the *Carlin* decision places an important gloss on the scope of the original *Armstrong* holding. As a matter of law, *Armstrong* neither requires that all e-mail be treated as "records" of permanent importance to the federal government, nor that the electronic versions of e-mail must be maintained and preserved in electronic form regardless of the adequacy of existing agency practices for retention of records in paper form. Until agencies make the successful transition to electronic record-keeping, the *Carlin* decision ensures that disposition authority in the form of a general records schedule remains in place, allowing normal, daily government operations to proceed without disruptions due to FRA litigation.

However, the present Archivist, John Carlin, has made it clear that he does not intend to rest on GRS 20, and that NARA is working towards long-term solutions to the disposition of electronic records. During the pendency of the *Carlin* litigation, the Archivist oversaw

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[24] *Id.* at 910.

the efforts of an Electronic Records Working Group ("ERWG"), a task force made up of individuals both in and outside of government, with the mission to develop policies and proposals aimed at developing one or more pieces of guidance to supplement or replace existing GRS 20[26]. In light of the outcome of the *Carlin* lawsuit, the Archivist has announced that further policies in this area will be issued with an eye towards meeting additional federal law requirements, recently imposed in the form of amendments to the U.S. Government Paperwork Elimination Act ("GPEA")[27]. The GPEA requires that all federal agencies provide for the optional use and acceptance of electronic documents and signatures, and electronic record-keeping, where practicable, as a substitute for paper by October 2003[28]. Needless to say, while the Archivist may have prevailed in the most recent round of e-mail litigation, he nevertheless faces the formidable challenge of continuing to providing relevant, sound, and timely guidance to the government at large, aimed at ensuring that each agency confronts and fulfills its ongoing statutory and regulatory obligations to manage all of its records, both paper and electronic, in what is still very much a transitional era.

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[25] 120 S. Ct. 1267.

[26] See generally http://www.nara.gov/records/grs20.

[27] Pub. L. 105-277 (1998).

[28] *Id.*, section 1707, 112 Stat. 2681-751 (1998).