

Recordkeeping in Government

Back in the day...

That there are people in government in this city, in every building, on every second floor, deleting emails because they do not realise they are records, is indicative of the times we are in. Recordkeeping used to be a struggle about creating records, now it's not only a struggle with creating it is a struggle with capturing, defining what type of record it is and deciding what we then do with it!

It is no overstatement to claim that record keepers make history. Those that manage these records are the curators of tomorrow's history.

In the 'olden' days it used to be quite simple...generally there were a whole heap of letters sent or received, written quite elegantly and with the Queens English of course, and these were registered in some equally beautiful calf skin bound leather volumes manufactured by a character from Dickens.

The letters, and whatever else had to be documented, came on paper. There was lots of paper, as there was very little else...maybe vellum, leather, but certainly lots of paper.

The records created in this relatively stable format had a shelf life bearing pretty good odds. And even better, you didn't need anything else other than a magnifying glass, at the worst of times, to be able to read them. One hundred, two hundred years later, that's probably, still all you need.

It was by pure chance that most of what survives today has done so. There was no legislation or standards to govern how records were created and maintained and disposed of or was there the significant demand from the public to access this material. Was their litigation of who said what to whom and when? Was the media scrutinizing the actions and behaviours of public servants?

The greatest threat to paper records was fire and flood and this was the case well into the 20th century.

Where are we now?

Within the past 2 decades, the story has changed dramatically. A significant amount of us have broadband in our homes, and an even larger amount has access to the Internet on our phones (even though half of us don't know how to use it!). The point is, at the flick of a switch we can be inundated with information from a variety of sources and in a variety of formats.

Information is at our fingertips, we want it all and we want it now. Governments have a responsibility to service communities and as technology changes so do the demands of our clients. It is now not enough to provide information via an office or over the phone, transactions between members of the public and governments are conducted online, in an environment where a traditional paper record may never be created, let alone captured and disposed of.

In addition to this and in stark contrast to the 1920s, it's the records about the everyday person that attracts the attention, with the vast majority of archive users being family historians (SRSA Ancestors in Archives 2000:x).

You may have heard that we are heading towards a "paperless office" whilst this may not be occurring just yet, many of us work in an environment where paper and digital records co-exist. Paper is now like some kind of sacred cow that should not be used on any day except Sunday, and it is the digital, electronic record that has come to the fore. But we need more than a magnifying glass for these, and we can't immediately guarantee that these records will be accessible on the shelf in five to seven years let alone one hundred, two hundred years later.

So how do we archive these digital records?

We will first start by taking a look at electronic and digital records.

What are electronic/digital records?

Electronic Record

A record created, communicated and/or maintained by means of electronic equipment. Although this term can refer to analogue materials (eg. videotapes), it generally refers to records held in digital form on magnetic or optical computer storage media.

(Adapted from Standards Australia AS 4390, Part 1, Clause 4.13; Kennedy, J, and Schauder, C, Records Management: A Guide to Corporate Recordkeeping, 2nd edition, Longmans, Melbourne, 1988, p. 293.)

Digital Record

A record created and/or maintained by means of digital computer technology. Includes records that are 'born digital' or have undergone conversion from a non-digital format. Digital records are a subset of electronic records.

(National Archives of Australia, Guidelines for Implementing the Functional Specifications for Recordkeeping Functionality in Business Information Systems Software Exposure draft, 2006, p.107,

<http://www.naa.gov.au/records-management/publications/BIS-guidelines.aspx>

Regardless of its format a record should correctly reflect what was communicated or decided or what action was taken. It should be able to support the needs of the business to which it relates and be used for accountability purposes.

Government and Digital Recordkeeping

Dr Peter Shergold (Secretary, Department of the Prime Minister and Cabinet) said that "The electronic machines of tomorrow may well struggle to read the electronic communication of today. That is why it is vital to convert and store digital records in a standard and stable format"

The tendency for Government to build information systems based on computers and computer networks poses a formidable challenge to agencies charged with custodianship of the State's memory. The knowledge and tools required to manage digital memory for persistence are very different from traditional records. Digital records exist on fragile media and cannot be seen. Combinations of hardware and software are required for digital records to be understood. As hardware and software become obsolete, the essential conditions for intelligibility may no longer be satisfied resulting in loss of digital memory. <http://www.sro.wa.gov.au/dri/dri.asp>

The Challenges with electronic records

The challenges with electronic records identified in Keeping Archives, 3rd Edition Chapter 15 Digital Recordkeeping is:

- Lack of clarity about where the records were being made, or if they were being made at all
- The decentralization of information and records management to the user, meaning a loss of corporate control
- Poor quality records being kept, lacking in contextual information that was once easily apparent on documents and files
- Challenges to the authenticity of records kept in inadequate recordkeeping systems

Digital Records are at a risk of being lost or destroyed due to factors such as:

- The rapid obsolescence of the hardware and software in which it is created
- The lack of adequate governance and accountability for digital recordkeeping
- Poor resourcing and methods to maintain and preserve these assets
- Technology, particularly with regard to digital records and archival management has leapt ahead of organizations ability to redevelop relevant supporting strategies
- Attitudinal change has fallen behind technological change

Putting in place a comprehensive Records Management Program regardless of format is necessary to ensure that appropriate creation and maintenance of authentic, reliable and useable records occurs.

The Records Management Standard As ISO 15489 describes the requirements for a comprehensive records management programme to establish best practice records management through:

- Strategy
- Governance and risk management
- Resources
- Business classification scheme and/or thesaurus
- Security regime
- Retention/disposal schedules
- Disposal program (including storage)
- Training and education
- Corporate electronic document and records management system
- Disaster preparedness

The Importance of Records Systems

As with paper records digital records should also have process and controls in place to manage them. Recordkeeping processes and controls fix documents in the context of social and organisational activity and preserve them as evidence of that activity. Some of the key processes and controls include:

- Creation
- Capture
- Classification
- Access
- Migration
- Disposal

An Information System:

“An information system which captures, manages and provides access to records through time.” (AS ISO 15489-2002, Records Management).

Managing records as evidence of social and organisational activity involves incorporating them into records systems that can:

- carry them forward with their 'fixed' content
- re-present their structure or documentary form
- maintain sufficient contextual links to preserve their meaning through time.

Record Management systems consist of more than technology they involve people, policies, procedures, and training. The DIRKS methodology is extremely useful when trying to implement a Recordkeeping system in your agency.

More information can be found relating to the DIRKS methodology at the following link:

<http://www.naa.gov.au/records-management/systems/dirks/index.aspx>

Just as records constitute a special type of document, records systems are a special type of information system. This was first clearly articulated by David Bearman (in "Record-Keeping Systems", *Archivaria* 36 (Autumn 1993): 16-37).

Information systems are normally designed to keep information that is:

- timely
- non-redundant
- manipulable.

To act as records systems, they need to contain information that is:

- time-bound
- redundant (ie. information able to be omitted without loss of meaning or function)
- non-manipulable.

Electronic Document and Records Management System

The use of an EDRMS provides one of the best methods for maintaining digital records over time and they allow for the capture of the record, its context and enables safeguards to be put in place to assist long-term preservation and access.

An EDRM system is designed to manage electronic content, documents and records and support four key functions:

- input (creation/capture)
- management (content, documents, records)
- collaboration/process management
- output/delivery.

An EDRM system is a combination of an active electronic content and document management system and an electronic records management system.

EDRM systems can be configured to meet the needs and the business processes of an organisation. The types of records being created and managed by the organisation, the organisation structure and its business activities will determine what elements are included in the configuration of software. When an organisation purchases an EDRM system, there are many preliminary steps required prior to implementation, including determining how the system will look to the end user such as entry forms and dialog boxes.

The capture of records into a recordkeeping system is the first step in the management of an organisation's records.

The purpose of capturing records into a recordkeeping system is to:

- Create a relationship between records and their business context
- Link records to other information
- Enable ongoing access to records
- Provide records with reliability and authenticity

Electronic document/records management systems (EDRMS) are a type of information system whose primary purpose is the capture and management of digital documents and records. EDRMS are systems designed specifically to manage the creation, use, maintenance and disposal of digital documents and records for the purposes of providing evidence of business activities.

EDRMS are distinguished from other information systems by their ability to:

- maintain appropriate contextual information and metadata, and links between records to enable their identification, support their value as evidence and provide access to them over time;
- enable the application of records management processes, such as classification, registration, search and retrieval, preservation and disposal; and
- apply controls to records, such as access and security controls, to preserve their content and secure their integrity.

(Above two paragraphs from: National Archives of Australia, Guidelines for Implementing the Functional Specifications for

*Recordkeeping Functionality in Business Information Systems
Software Exposure draft, 2006, p.37)*

Please also note some other types of information management systems are also starting to include the capability of managing records, for example:

- Web Content Management Systems
- Enterprise Content Management Systems
- Email Management Systems
- Workflow Systems
- Digital Asset Management Systems

Metadata

Recordkeeping metadata for records captured into an EDRMS provide context, content and structure of the records. It is imperative that the metadata be appropriately managed to ensure the evidential value of the records.

Recordkeeping metadata must be managed, maintained and retained for as long as the record is retained, in an open and enduring format. Even when records are removed from the system, the metadata associated with the records provides evidence of the existence of the records.

In the hardcopy world this need typically arose when records were transferred to an archives repository. Broader contextual metadata was captured in archival control systems and finding aids rather than in current records systems. However, in the global and virtual domains of cyberspace, we need to make what was known before through physical ordering and location (custody) explicit in metadata captured with the record or persistently linked to it.

Digital recordkeeping processes related to metadata include the following:

Capture - a deliberate action, which results in the registration of a record into a recordkeeping system. (AS 4390.1 General, clause 4) It is similar to 'registration'.

Registration – the act of giving a record a unique identifier on its entry into a system (AS ISO 15489-1). The purpose of registration is to provide evidence that a record has been created or captured in a recordkeeping system. It involves recording brief descriptive information about the record in a register and assigning the record a unique identifier.

Indexing – the process establishing access points to facilitate retrieval of records and/or information. In electronic systems registration and indexing are the same process, for example through the allocation of codes, locations and a system for retrieval.

Classification – the systematic identification and arrangement of business activities and/or records into categories according to logically structured conventions, methods, and procedural rules represented in a classification system. (AS ISO 15489-1)

Controlled vocabulary - further descriptive and control details can be attached to the record by using vocabulary controls such as a list of authorized headings or a thesaurus.

What is digital archiving?

Digital archiving is the preservation and maintenance of digital records that have been either created in an electronic format or migrated into an electronic document.

Archival Principles

How does the permanent retention of digital records differ from hardcopy records?

For hardcopy records two important Archival Principles are:

- Provenance
- Original Order

Provenance and Original Order help the user of archives feel confident that what they are accessing are reliable, authentic records of functions and activities undertaken in the past.

How do we establish Provenance?

Through the collection of metadata at the time of accessioning the records, including:

- Name of the agency, organisation, person or family that created, maintained and used the records (creator)
- Classification terms (function/activity of the record)
- Series (links to other records created for the same purpose)
- Through an agency/creator description that details the administrative history of an agency/creator through a Series description that provides the context for the creation, maintenance and use of the records, and describes relationships to other series of records created by the same agency, organisation or person.

How do we establish Original Order?

Through research and description of how the records were:

- collected (eg by subject, by author, by date etc.),
- stored (eg as a file or docket, as a batch, as an individual document etc.) and/or

- indexed (eg by file number, alphabetically by subject or author, etc.)

In addition to this, we must also address the concepts of:

- Authenticity
- Reliability, and
- Integrity.

An authentic record is one that is capable of being proved to be what it purports to be (i.e. the content is what it appears to be, it was created by the person who appears to have created it, and it was created at the time it appears to have been created).

A reliable record is one that contains a full and reliable representation of the facts, which the record documents.

Integrity refers to the record being complete and without unauthorised alterations.

So, what is different about archiving digital records?

The challenge in preserving electronic records is ensuring that the systems that manage the electronic records hold sufficient metadata and implement suitable processes to ensure the long-term retention of context, authenticity, reliability, and integrity.

We need to be able to view these records in 10, 20, 100 years time as they were originally created.

(Archival Principles is taken from the Business Information Management program, Digital Recordkeeping, Lecture 13 by Judith Ellis 2008)

The Primary Goal of a Virtual Archive:

The Primary Goal of a Virtual Archive is to preserve the accessibility over time and to protect the records authenticity and integrity.

Principles of Virtual Archiving:

The following four principles relate to virtual archiving:

Record Keeping Framework

As with other records electronic records are created as evidence of business activity. Organisations are responsible for creating, managing and preserving their electronic records for as long as they are required.

Capture of records as Archives and metadata

Electronic records designated as archives firstly need to be captured into a system that keeps records along with metadata that describes their content, structure and context. This enables the records and metadata to be migrated to an archival system for their ongoing management over time.

Management of records for as long as required

Electronic records must be managed to remain accessible for as long as required, and in the case of digital archives, require a range of management processes and control systems to ensure that access potentially to a wide audience, as well as outside the creating organisation.

Preservation of records of archival value

Virtual archives require preservation to ensure their ongoing accessibility. Preservation strategies should reflect the organisations legislative obligations, industry standards and best practice.

NAA recommends the following core counter-disaster strategies for the protection of digital records:

- Duplication and dispersal of vital digital records
- Transfer records of archival value to (an archive) as soon as they are no longer required for business purposes
- Regular system backups
- Secure storage facilities for digital devices and appropriate environmental controls
- High standards of security systems to prevent unlawful access, alteration and prevention of computer viruses

A range of preservation strategies is available to maintain the accessibility, authenticity and integrity of electronic records over time. There is no single strategy but a range from various jurisdictions, such as:

- Migration – moving records from one system to another
- Emulation – building systems, platforms or programs that mimic the operation of defunct environments
- Encapsulation – grouping together of a digital object with other information necessary to provide access
- Conversion – changing records from one medium or format to another medium or format
- Technology Preservation – maintaining old technologies to enable access to old formats

What is happening around the world: Standards and Models for Digital Archives?

The National Archives, United Kingdom

The National Archives (TNA) collects records as defined by the Public Records Act 1958. Essentially the archive collects records of central government, the courts and public enquiries. More well-known paper material within the archive includes the Domesday Book, census data and Cabinet Office Minutes.

TNA holds the bulk of its digital records in its Digital Archive. This material includes digital objects from a wide variety of types – documents, images, databases, emails, video audio etc. Other born digital material is held in a Web Archive (for web sites, naturally) and The National Digital Archive of Datasets which holds datasets from central government departments (generally, survey or census type materials which are in a raw form and require substantial supporting information for interpretation).

TNA's Digital archive does not prescribe a particular file format for collection of digital objects. Consequently, there is potentially a very wide range of digital object types to be transferred to TNA by the government agency that created them. However, TNA does provide guidance on format selection for preservation planning.

Metadata accompanying a submission are strictly controlled and requirements are built around the type of descriptive information provided. This is all undertaken in collaboration between Records Officers within the government agencies and staff from TNA. All this submission information goes through a process of validation at TNA and is sometimes further enhanced, along with any technical information.

Archival storage within TNA for digital objects is a service with limited responsibilities that is easily resolved with the help of technology. TNA relies on advanced technology for their storage management, but also use a policy of multiple copies for objects to reduce risk of data loss. Describing the archival collection from a digital perspective was a matter of building onto a long tradition of archival description applied to traditional media. The administration of the digital archive is spread across departments and units and responsibility is shared amongst employees.

Under the banner of preservation planning, TNA is active in setting preservation standards, building technologies to support migration planning and monitoring technology and file format identification

Users of TNA digital archives gain access via reading rooms or from the internet.

PROV – Public Records Office of Victoria

The Public Record Office of Victoria is the state's archival office holding records that date back to the mid 1830s. The office contains both traditional paper based records and also electronic records. The digital archive at PROV will only accept records that have been maintained in an electronic recordkeeping system that is compliant with the Victorian Electronic Records Strategy (VERS).

VERS originated in 1995 when the Victorian State Government together with industry and academia tried to find a practical solution to dealing with electronic records. The initial standard was launched in 2000 with the current updated version released in 2003. VERS provides a solution to the creation, capture, and preservation of electronic records. There is a specific strategy that has been adopted by VERS, which specifies the standard format for electronic records which:

- Is generic but extensible, so that it will work in conjunction with existing recordkeeping and business practices
- Ensures that all records are stored in a documented format, to enable viewing of records in the future, regardless of the system that created them
- Specifies methods to automate the capture of records from the desktop and business systems
- Specifies ways and forms in which to capture information about records and encapsulate this with the records to ensure that records in the future will be understood in context
- Details a method for securing records so that any changes are detectable

(<http://www.prov.vic.gov.au/vers/vers/strategy.htm>) as sourced from the VERS website

There are various benefits associated with the use of the VERS framework including:

- Significantly improved accessibility to records over time and distance
- Reduced paper record handling and storage
- Increased discovery and reuse of records

Prior to the transfer of records PROV will test the agency's system to ensure that it is VERS compliant and it meets the requirements of the VERS standard.

Further information is available at

http://www.prov.vic.gov.au/records/transfer/electronic_records.asp

NAA – National Archives of Australia

The National Archives of Australia is a federal government agency that houses a collection of records ranging from paper files to photographs to radio and speech recordings and also including digital records. The NAA has its main office located in Canberra with additional offices located in each state's capital and Darwin.

NAA's digital archive was established in 2006 and has been designed to:

- Encourage use by anyone needing to access digital records over a period of time
- Convert the files formats into "open formats" which allows a greater potential lifespan in the future
- Operate across various platforms

XENA (XML Electronic Normalising of Archives) software is what NAA use to their digital preservation process. This software converts digital format from their original format into an open format that can be used by NAA.

The process that NAA uses has a number of checks to make sure that the record is not corrupted in any way and maintains its authenticity and integrity while the transferred records are undergoing the transfer process into the Digital Archive.

Further information available from the following websites:

<http://www.naa.gov.au/>

<http://www.naa.gov.au/records-management/index.aspx>

National Archives of Australia (NAA)

<http://www.prov.vic.gov.au/>

<http://www.prov.vic.gov.au/about/>

Public Records Of Victoria (PROV)

<http://www.prov.vic.gov.au/vers/standard/>

<http://www.prov.vic.gov.au/vers/vers/>

Victorian Electronic Records Strategy (VERS)

The Changing Environment

Archives are no longer “institutions” that collect manuscripts for purely research purposes. The information being retained and preserved by archives has changed, the format of this information has changed, the people accessing these objects is changing, even the general understanding of what constitutes an archive has changed.

More and more people now have access to the Internet and in the years to come this may result in an increased demand for access to records held in archives online.

As the Consultative Committee for Space Data Systems (CCSDS) state in their *Reference Model for an Open Archival Information System (OAIS)* (Blue Book, January 2008, Page 2-1):

The term ‘archive’ has come to be used to refer to a wide variety of storage and preservation functions and systems. Traditional archives are understood as facilities or organizations that preserve records, originally generated by or for a government organization, institution, or corporation, for access by public or private communities. The archive accomplishes this task by taking ownership of the records, ensuring that they are understandable to the accessing community, and managing them so as to preserve their information content and authenticity. Historically, these records have been in such forms as books, papers, maps, photographs, and film, which can be read directly by humans, or read with the aid of simple optical magnification and scanning aids. The major focus for preserving this information has been to ensure that they are on media with long-term stability and that access to this media is carefully controlled.

The explosive growth of information in digital forms has posed a severe challenge not only for traditional archives and their information providers, but also for many other organizations in the government, commercial and non-profit sectors. These organizations are finding, or will find, that they need to take on the information preservation functions typically associated with traditional archives because digital information is easily lost or corrupted. The pace of technology evolution is causing some hardware and software systems to become obsolete in a matter of a few years, and these changes can put severe pressure on the ability of the related data structures or formats to continue effective representation of the full information desired. Because much of the supporting information necessary to preserve this information is more easily available or only available at the time when the original information is produced, these organizations

need to be active participants in the long-term preservation effort, and they need to follow the principles espoused in this OAIS reference model to ensure that the information can be preserved for the Long Term. Participation in these efforts will minimize the lifecycle costs and enable effective long-term preservation of the information.

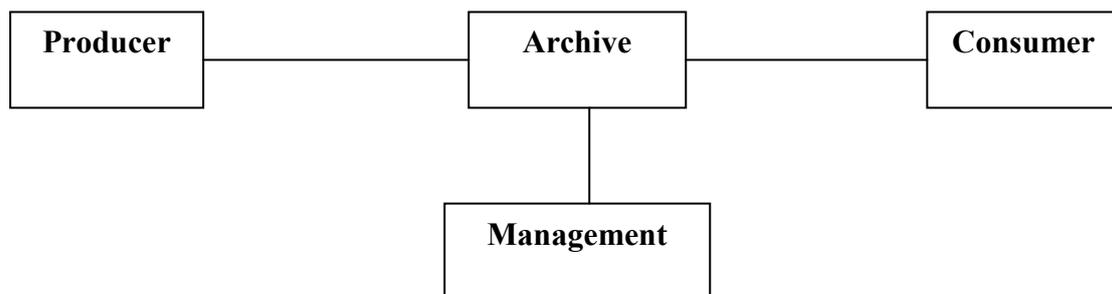
The OAIS Model

The model for a virtual archive, established by the CCSDS, is a framework that specifically applies to organisations with a responsibility to make information available in the long term. It therefore applies to the “traditional” archive as well as an increasing number of other organisations who have a business need to ensure the long-term preservation of and access to, records.

The CCSDS state that:

An OAIS archive is one that intends to preserve information for access and use by a Designated Community. It includes archives that have to keep up with steady input streams of information as well as those that experience primarily aperiodic inputs. It includes archives that provide a wide variety of sophisticated access services as well as those that support only the simplest types of requests.

The following model demonstrates simply the environment surrounding an OAIS archive:



In this model the following definitions apply:

Producer is the role played by those persons, or client systems, which provide the information to be preserved.

Management is the role played by those who set overall OAIS policy as one component in a broader policy domain.

Consumer is the role played by those persons, or client systems, which interact with OAIS services to find and acquire preserved information of

interest. A special class of Consumers is the Designated Community. The Designated Community is the set of Consumers who should be able to understand the preserved information.

As you can see this approach is similar to how a traditional archive may view itself and some of its stakeholders.

Under the OAIS model the archive consists of a number of functions / functional entities. These are as follows:

- Ingest
- Archival Storage
- Data Management
- Preservation Planning
- Access
- Administration

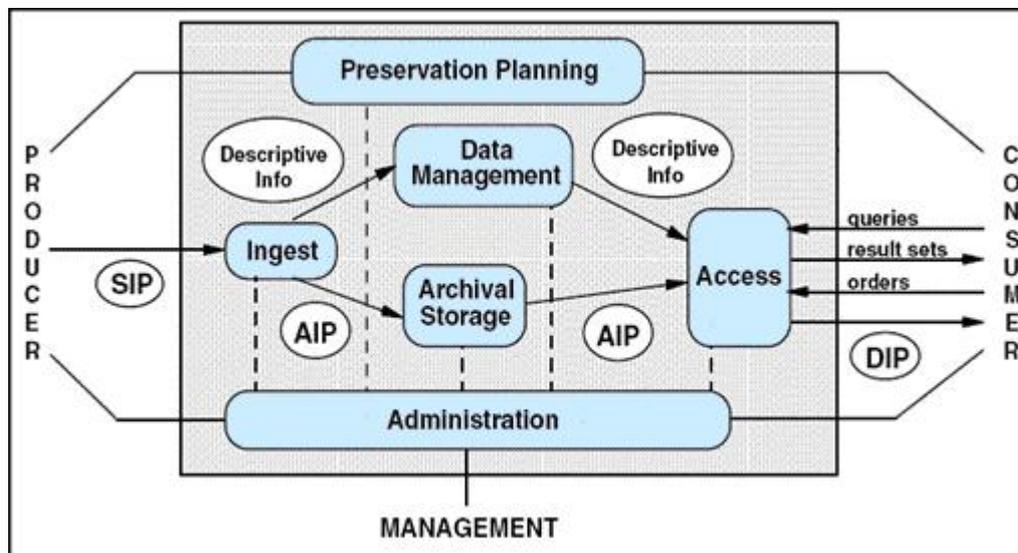


Diagram sourced from the Reference model for an Open Archival Information System (OAIS) CCSDS 650.0-B-1 Blue Book January 2002

The OAIS model can be explored in more depth at the following site:

OAIS Reference Model, Consultative Committee for Space Data Systems. January 2002. <http://nost.gsfc.nasa.gov/isoas/>

Adoption of the OAIS Model

The Australasian Digital Recordkeeping Initiative (ADRI), in its investigation and development of its *Model Plan for an Archival Authority Implementing Digital Recordkeeping and Archiving* (March 2007) adopts the OAIS model and makes the assumption that the Reference Model for an Open Archival Information System (OAIS) is used as a basis for an authority's preservation strategy.

However it is important to note that it is not the only model available for the preservation of digital records in a virtual archive.

Sections to be inserted by archive re: digital archiving in their domain

State/Domain specific information to be included.

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