

ARMA International  
Greater Columbus ARMA Chapter  
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# Protecting Long-Term Digital Records Using a Capability Maturity Model Approach

Lori Ashley  
Co-developer DPCMM  
Industry Market Development Manager - Preservica

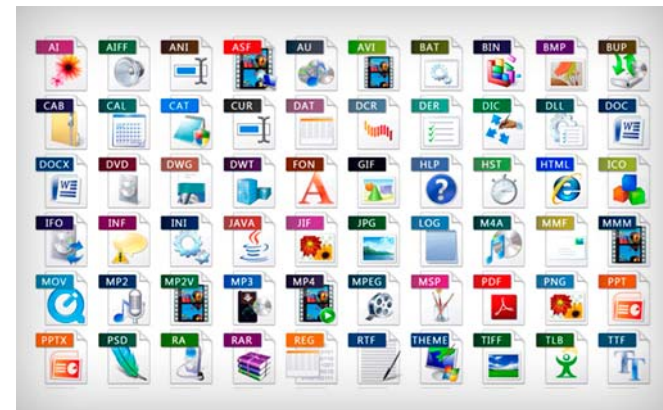
# Session Agenda

- The Case for Digital Preservation
- My Professional Journey to DP
- DP Capability Maturity Model & DigitalOK.org
- Call to Action
- Case Studies
- Summary
- Resources
- Q&A



# Digital Fragility

- Dependent on hardware and software
- Subject to technology refresh cycles
- At risk of loss and storage degradation
- File formats come and go
- Vendor abandonment
- Legacy applications and successive custodians



“Hardware, software, and file format obsolescence risks will haunt us if not taken seriously.”



Cheryl McKinnon

# Risks to Long-Term Digital Information



- Storage media on which the information resides (removable media and fixed hardware) becomes **out-of-date and unusable**
- De-contextualization or loss occurs due to **lack of descriptive metadata** needed to accurately retrieve information
- Bits and bytes **become corrupt over time**, rendering files unreadable
- **Loss of integrity and trustworthiness** of business evidence if chain of custody is not preserved during transitions
- Software programs and hardware components become obsolete or are decommissioned **without a preservation plan** for information that has continuing retention requirements
- Organizational and leadership changes resulting in **shifting priorities and resources**



# How Long is Long-Term?

- “...long enough to be concerned with the impacts of changing technologies, including support for new media and data formats, or with a changing user community. Long Term may extend indefinitely.”

  - ISO 14721:2012
- Long-term, by consensus, came out to be anything **beyond 10-15 years** because that is the timeframe beyond which they begin to lose control of logical and physical migration

  - SNIA 100 Year Archive Study Requirements Survey, January 2007

**How Long is Long-Term?**

The ISO 14721:2012 Standard defines long-term as “long enough to be concerned with the impacts of changing technologies, including support for new media and data formats, or with a changing user community. Long term may extend indefinitely.”

*The answer depends on your perspectives on time and technology...*

“An organization should consider reasonable means to maintain the integrity and availability of long-term information assets throughout their intended useful life.”  
The Indiana Conference Commentary on Information Governance (2013)

Thinking about your organization's official records, place a dot if you have digitally encoded records that must be retained for:

- >10 years but less than 25 years
- >25 years but less than 50 years
- >50 years but less than 100 years
- >100 years but not permanent
- Permanent

**RACI Matrix for Long-Term Digital Preservation**

A RACI Matrix identifies the people Responsible, Accountable (also Approver), Consulted, and Informed as part of a project or initiative.

<b>RESPONSIBLE</b> (The Doers)	<b>ACCOUNTABLE</b> (The Boss)
<b>CONSULTED</b> (The Advisors)	<b>INFORMED</b> (The Dependents)

A RACI Matrix is also a useful tool for identifying gaps that lead to project failure. Among the most common RACI gaps is the lack of a person in the Approver role.

Long-term, by consensus, came out to be anything beyond 10-15 years because that is the timeframe beyond which they begin to lose control of logical and physical migration.  
SNIA 100 Year Archiving Study Report (2007)

Fill in the RACI Matrix for your Organization

Poster presented @ ARMA Canada 2015

# Records Preservation Options



ISSUED FOR THE LOCAL GOVERNMENT RECORDS  
COMMITTEE BY THE  
PENNSYLVANIA HISTORICAL AND MUSEUM  
COMMISSION  
BUREAU OF THE PENNSYLVANIA STATE  
ARCHIVES

HARRISBURG  
APPROVED DECEMBER 16, 2008  
(as amended March 28, 2019)

<https://www.phmc.pa.gov/Archives/Records-Management/Documents/2019-Municipal-Records-Manual-rev-with-links.pdf>

## APPENDIX E

### PDF/A NOTIFICATION FOR PERMANENT MUNICIPAL RECORDS

This form must be completed for any series of records that a municipal government wishes to maintain electronically to satisfy permanent retention.

1. Municipality: \_\_\_\_\_
2. County: \_\_\_\_\_
3. Office of Origin: \_\_\_\_\_
4. Mailing Address: \_\_\_\_\_
5. Contact Person: \_\_\_\_\_
6. Phone: \_\_\_\_\_
7. Email: \_\_\_\_\_
8. Records Title: \_\_\_\_\_
9. Retention Period in Records Manual: \_\_\_\_\_
10. Citation in Records Manual: \_\_\_\_\_

This form serves as notification that the records series described above are permanent or long-term official records that will be maintained in PDF/A format, a specific variation of PDF designed for long-term preservation, in accordance with the policy standards and guidelines approved by the Local Government Records Committee and in force on the date of

**6.3 Permanent Records.** To be in conformance with this policy, permanent records must be retained either in paper format, microfilm format that has been created and maintained in conformance with applicable standards approved by the LGRC, or in electronic format, one copy of which (the Security Preservation File) is maintained in the manner and under the conditions set forth in this policy and its related guidelines, issued by the State Archives. **Municipalities must send a notification (refer to Appendix E, PDF/A Notification for Permanent Municipal Records)** to the State Archives if they decide to keep permanent records in PDF/A format.

### STANDARDS FOR MICROFILMING MUNICIPAL RECORDS

#### 1. Authority

The standards were adopted by the Local Government Records Committee in accordance with the Municipal Records Act.

#### 2. Purpose

The standards are designed to help ensure the accuracy, usability, longevity and local

**ANSI.** Acronym for the American National Standards Institute. ANSI is comprised of government agencies, organizations, companies, academic and international bodies, and individuals.

**Aperture card:** (1) A card with a rectangular opening(s) specifically prepared for the mounting or insertion of microfilm. (2) A

# What It Means to Future-Proof

- Long-term, error-free storage of digital information, with means retrieval and interpretation, for the entire time span the information is required to be retained
- Applies to “born digital” content as well as content that is converted to digital form from paper or film



# Digital Preservation Defined

- **Short Definition** - Digital preservation combines policies, strategies and actions that ensure access to digital content over time.
- **Medium Definition** - Digital preservation combines policies, strategies and actions to ensure access to reformatted and born digital content regardless of the challenges of media failure and technological change. The goal of digital preservation is the accurate rendering of authenticated content over time.

# ISO 14721: Open archival information system

- Developed to support formal standards for the long-term preservation of space science data and information assets
- Reference model - not designed as implementation model (what, not how)
- Defines an **Open archival information system (OAIS)** as:  
“An archive consisting of an organization of people and systems that has accepted the responsibility to preserve information and make it available and understandable for a Designated Community.”
- Includes common vocabulary, data models, functions and responsibilities
- Adopted by worldwide digital preservation community

Available free from  
<http://public.ccsds.org/publications/archive/65oxom2.pdf>

# ISO 16363 – companion standard

- Defines a recommended practice for assessing the trustworthiness of digital repositories
- Applicable to the entire range of repositories
- Can be used as basis for certification

INTERNATIONAL  
STANDARD

ISO  
16363

First edition  
2012-02-15

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**Space data and information transfer  
systems — Audit and certification of  
trustworthy digital repositories**

*Systèmes de transfert des informations et données spatiales — Audit et  
certification des référentiels numériques de confiance*

Available free from  
<https://public.ccsds.org/Pubs/652xom1.pdf>

# ISO 16363 Components

## Organizational Infrastructure

- Governance and Organizational Viability
- Organizational Structure and Staffing
- Procedural Accountability and Preservation Policy Framework
- Financial Sustainability
- Contracts, Licenses, and Liabilities

## Digital Object Management

- Ingest: Acquisition of Content
- Ingest: Creation of the AIP
- Preservation Planning
- AIP Preservation
- Information Management
- Access Management

## Infrastructure and Security Risk Management

- Technical Infrastructure Risk Management
- Security Risk Management

Download an ISO 16363 self-assessment spreadsheet from PTAB here:  
<http://www.iso16363.org/iso-certification/preparation/>



# Exemplar – Trusted Digital Repository certified to ISO 16363

## US Government Publishing Office

### Summary of govinfo

The United States Government Publishing Office (GPO) is the Federal Government's official, digital, secure resource for producing, procuring, cataloguing, indexing, authenticating, disseminating, and preserving the official information products of the U.S. Government. The GPO is responsible for the production and distribution of information products for all three branches of the Federal Government, including U.S. passports for the Department of State as well as the official publications of Congress, the White House, and other Federal agencies in digital and print formats. GPO provides for permanent public access to Federal Government information at no charge through govinfo ([www.govinfo.gov](http://www.govinfo.gov)) and has partnerships with approximately 1,100 libraries nationwide participating in the Federal Depository Library Program (FDLP).

The GPO govinfo holdings size is currently 65TB; the repository has 2.2 million Archival Information Packages (AIPs) and 1.5 million GPO specific Access Content Packages (ACPs) which are optimized for access and delivery. The AIPs are made up of 1.1 million United States Courts Opinions collection AIPs, 600,000 Congressional AIPs, and smaller numbers from other sources. In FY17, there were a total of 540,000,000 document retrievals from the public website and an average of 45,000,000 retrievals per month. The system maintains a high level of availability. The staffing is approximately 40 FTEs, almost evenly divided between government employees and contractors. **There are two instances of the system, a primary instance and a continuity of operations instance. The two instances have identical hardware setups;** the databases and files are synchronized automatically so that if the primary instances fail, or is taken down for some other reason, then the services can be provided by the continuity of operations instance. The govinfo website replaced the FDsys website in December 2018, and at that time, GPO began to refer to the entire system as govinfo.

### NEWS RELEASE



FOR IMMEDIATE RELEASE: January 15, 2019

No. 19-03

GPO MEDIA CONTACT: GARY SOMERSET | 202.512.1957 | mb.202.355.3997 | [gsomerset@gpo.gov](mailto:gsomerset@gpo.gov)

## GPO'S GOVINFO MAKES HISTORY BY EARNING GLOBAL CERTIFICATION FOR TRUSTWORTHINESS



# My professional journey to digital preservation



# Y2K Revelation and Beyond in Regulated Utility Companies

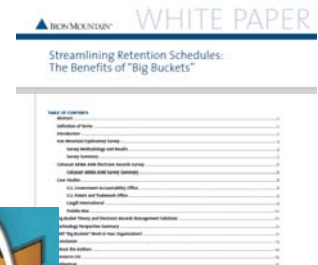
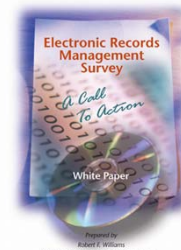
- Business & Regulatory Strategist
  - Electric & gas utility
  - Acquisition of gas-only utility
  - Legal hold on records relating to decades old environmental contamination matter
  - CRM Mentor
- Organizational Development Specialist
  - Employee Surveys
  - Voice of the Customer
  - Non-regulated holding company
- Supply Chain Strategist & Records Gadfly
  - High voltage regional transmission company
  - Records consolidation from 3 major and 15+ small companies
  - Wasted RIM opportunity

# Statewide Data, Records & Forms Coordinator



- Department of Electronic Government
  - Short-lived unit – reverted back to DOA units when administration changed
  - My role - Enterprise Information Domain Manager - Formation of governance structure to provide on-going strategic direction for managing the state's information resources through enterprise level policies, standards and tools
- Gained deep appreciation for policy development, consensus building, and the extraordinary dedication and patience of public servants
- Learned how the Public Records Board works
- Developed lasting relationships with like-minded RIM practitioners
- Joined ARMA Madison chapter

# RIM Consulting & Teaching



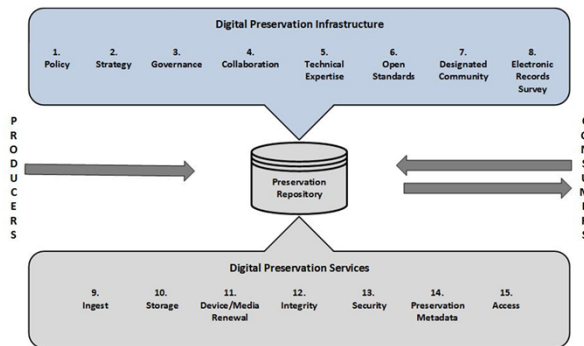
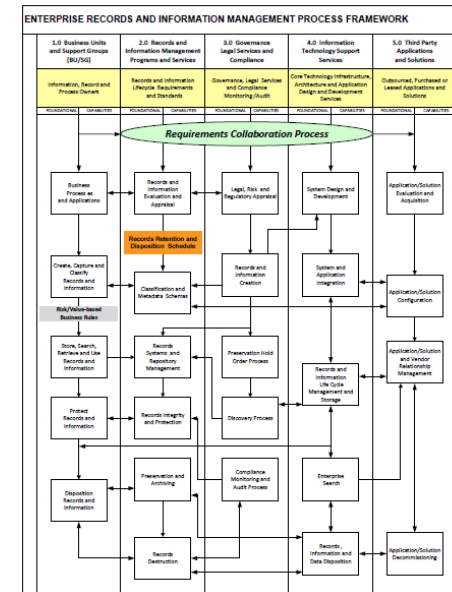
## Adjunct Instructor in Records Management

- Clayton State University - MAS
  - Archives Curriculum Committee
- UW-Madison iSchool
- UW-Extension – Summer intro course

State of North Dakota\*State of Wyoming\*Rockwell Automation\*Emerson College\*Council of State Archivists (CoSA)\*Church Pension Group\*City of Toronto\*Kansas Historical Society\*Waukesha County, WI\*IBM\*Barr Engineering\*DuPont\*Chevron Corporation \*McKesson Corporation\*WEA Trust\*National Enrichment Facility (Louisiana Energy Services)\*Swiss Colony\*Platte River Power Authority\*CUNA Mutual Group\*Evangelical Christian Credit Union\*Madison Gas & Electric Company\*Philip Morris International\* William D. and Catherine T. MacArthur Foundation\*Southern California Edison\*EMC Corporation\*American Transmission Company\*Valero Energy\*SC Johnson \*Weyerhaeuser\*Wind Lake Solutions\*West Bend Mutual Insurance\*Actelion

# Continuous Improvement Frameworks

- Enterprise Content and Records Management (ECRM) Process Framework
- Assured Records Management (ARM)
- ISO 15489: DIRKS and Beyond
- Digital Preservation Capability Maturity Model (DPCMM)



### Digital Continuity Checklist

*Is Your Organization DigitalOK?*

Every organization has electronic records and digital content that it wants to retain and have access to for long periods of time (e.g., 30 years or greater). This may be due to regulatory or legal reasons, a desire to preserve organizational history and memory, or they may be critical to its operational success. But long-term continuity of digital information doesn't happen by accident - it takes planning and a clear awareness of the technology and the business at risk.

As the volume and complexity of digital information grows, so does our reliance on hardware and software. But digital media and the human-machine interface is not a new concept and can't be relied upon to support some types of information and records for as long as they will be needed. The Digital Continuity Checklist was developed to help you identify whether organizational dependencies exist as well as business or system-wide capabilities are in place to ensure that specific categories of long-term information assets are identified, analyzed, reviewed, understood and retained. There are various ways that the DigitalOK Checklist can be used, two of which are described briefly below.

For each line item of the enterprise or specific information asset level, check whether the capability is "Checked and OK," "May Need Future Attention," or "Requires Immediate Attention." Any boxes that are left unchecked should be placed on a "To Do" list for your next research the answers.

Use your findings to stimulate dialogue among stakeholders and inform the strategic planning process to ensure that the digital assets your organization needs will continue to be available and usable over time.

For more information or to share your checklist results, please contact Charles Dooler or Lori Ashley.



# Capability Maturity Models (CMM)

- Management tool designed to help implement effective methods in a given management discipline
- Structured collection of elements that describe characteristics of processes
- Provides a place to start, the benefit of prior experience, a common language, a framework for prioritizing actions and a way to define improvement



# Generally Accepted Recordkeeping Principles

## EIGHT PRINCIPLES

- Accountability
- Transparency
- Integrity
- Protection
- Compliance
- Availability
- Retention
- Disposition

## FIVE PERFORMANCE LEVELS

- Sub-standard
- In Development
- Essential
- Proactive
- Transformational

ARMA International' Information Governance Maturity Model

GARP Principle	LEVEL 1 (Sub-Standard)	LEVEL 2 (In Development)	LEVEL 3 (Essential)	LEVEL 4 (Proactive)	LEVEL 5 (Transformational)
<b>Accountability</b> A senior executive (or person of comparable authority) oversees the recordkeeping program and delegates program responsibility to appropriate individuals. The organization adopts policies and procedures to guide personnel, and ensure the program can be audited.	No senior executive (or person of comparable authority) is responsible for the records management program.  The records manager role is largely non-existent or is an administrative and/or clerical role distributed among general staff.	No senior executive (or person of comparable authority) is involved in or responsible for the records management program.  The records manager role is recognized, although he/she is responsible for tactical operation of the existing program.  In many cases, the existing program covers paper records only.  The information technology function or department is the de facto lead for storing electronic information, but this is not done in a systematic fashion. The records manager is not involved in discussions of electronic systems.	The records manager is an officer of the organization and is responsible for the tactical operation of the ongoing program on an organization-wide basis.  The records manager is actively engaged in strategic information and record management initiatives with other officers of the organization.  Senior management is aware of the program.  The organization has defined specific goals related to accountability.	The records manager is a senior officer responsible for all tactical and strategic aspects of the program.  A stakeholder committee representing all functional areas and chaired by the records manager meets on a periodic basis to review disposition policy and other records management-related issues.  Records management activities are fully sponsored by a senior executive.	The organization's senior management and its governing board place great emphasis on the importance of the program.  The records management program is directly responsible to an individual in the senior level of management, (e.g., chief risk officer, chief compliance officer, chief information officer) OR,  A chief records officer (or similar title) is directly responsible for the records management program and is a member of senior management for the organization.  The organization's stated goals related to accountability have been met.



[www.arma.org](http://www.arma.org)



# DPCMM Components

## INFRASTRUCTURE

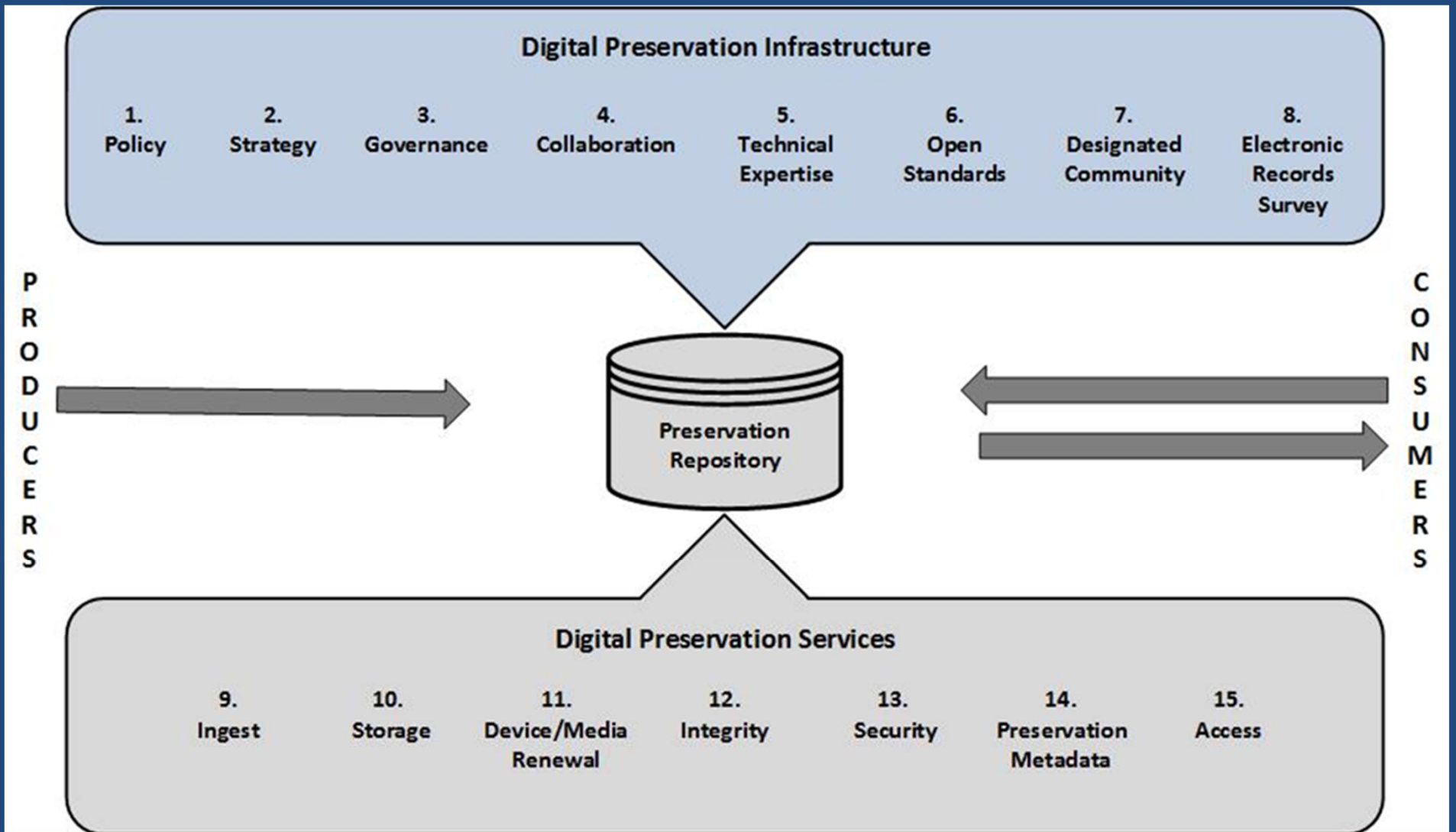
1. Digital Preservation Policy
2. Digital Preservation Strategy
3. Governance
4. Collaborative Engagement
5. Technical Expertise
6. Open Standard Technology  
Neutral (OS/TN) Formats
7. Designated Community
8. Electronic Records Survey

## SERVICES

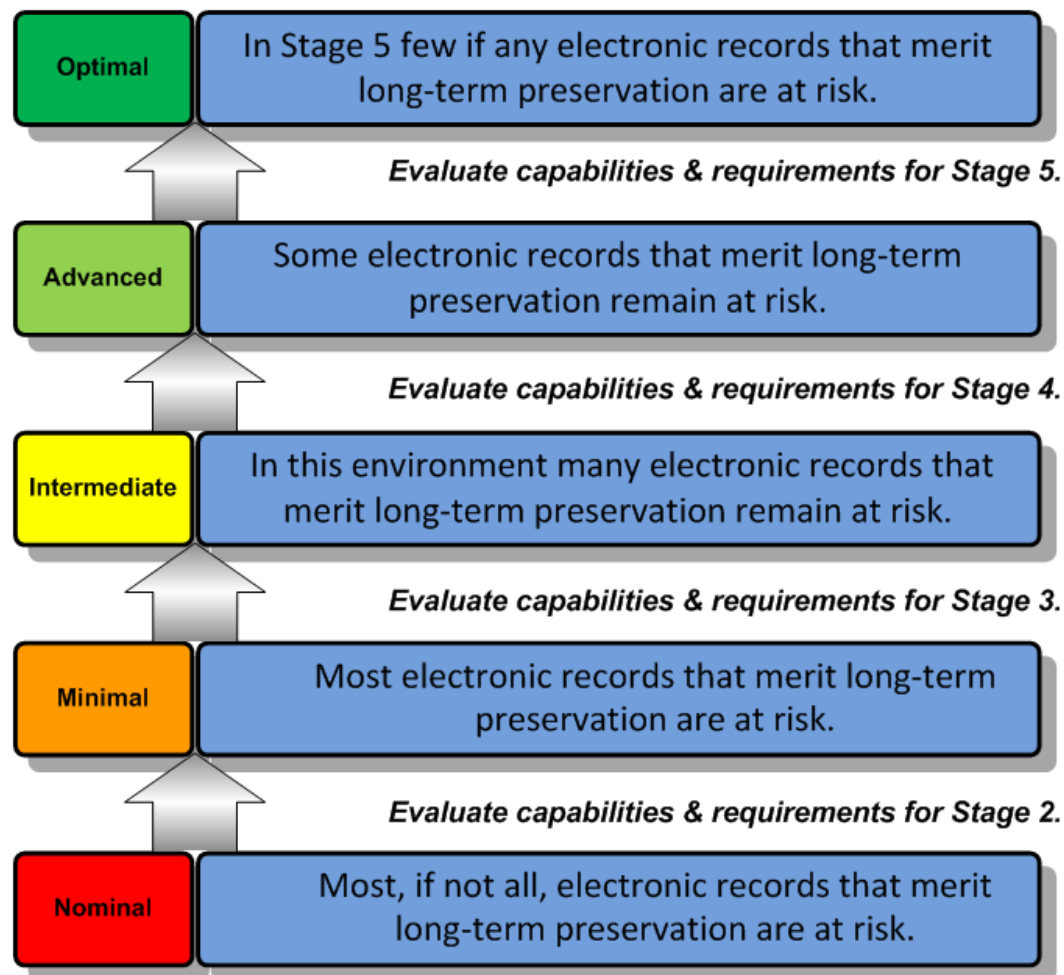
9. Ingest
10. Archival Storage
11. Device/Media Renewal
12. Integrity
13. Security
14. Preservation Metadata
15. Access



# Digital Preservation Capability Maturity Model (DPCMM)



# Digital Preservation Capability Maturity Model Stages



- Five (5) progressively advanced capability levels
- Enables high level assessment of current digital preservation capabilities against good practice standards
- Facilitates development of strategic roadmap for incremental levels of improvement based on
  - risk exposure
  - business requirements
  - available resources

# Benefits of DPC Self-Assessment

- A road-tested assessment methodology to benchmark current state capabilities to preserve and provide access to long-term digital records
- Supports establishment of priorities and tracking progress
- Supports stakeholder engagement and education on requirements and standards

# Hypothetical Use Case - NIRMA

- Nuclear operator with facilities in USA
- System of record (“preservation repository”) being assessed is ECM/RMA
  - Commercial software certified to DoD 5015.12
- Organization has up to date records retention schedules
- Organization is required to maintain records for the life of the facility and submit a variety of reports to the NRC

# Is This Good Enough?

Index Score Results	Nominal (0)	Minimal (1)	Intermediate (2)	Advanced (3)	Optimal (4)
DIGITAL PRESERVATION POLICY	●				
DIGITAL PRESERVATION STRATEGY		●			
GOVERNANCE			●		
COLLABORATIVE ENGAGEMENT		●			
TECHNICAL EXPERTISE		●			
OPEN STANDARD TECHNOLOGY NEUTRAL FORMATS		●			
DESIGNATED COMMUNITY	●				
ELECTRONIC RECORDS SURVEY		●			
INGEST	●				
ARCHIVAL STORAGE			●		
DEVICE/MEDIA RENEWAL					●
INTEGRITY	●				
SECURITY	●				
PRESERVATION METADATA	●				
ACCESS	●				

## Index Score: 13/60

Based on your responses, the digital preservation capabilities and services of your organization and repository fall into the **Minimal** level. Digital preservation capabilities are rudimentary and most electronic records that merit long-term retention are at risk.

# Digital Preservation Capability Self-Assessment based on DPCMM



## New User?

Click the button below and fill out our simple form to request an account.

Create New User Account

## Please sign in

Username

Password

Login ↻

[Forgot your password?](#)

[www.DigitalOK.org](http://www.DigitalOK.org)



## Background Information

Name:\*

Title:\*

Organization:\*

Repository:\*

Location (city, state/province, country): \*

**Names and Titles of Contributors who participated in preparing this self-assessment response:**  
NIRMA Conference presentation 'Protecting Long-Term Digital Records Using a Capability Maturity Model Approach" - August 9, 2016"/>

**Does the digital preservation repository conform to the functional specifications of the [ISO 14721](#) standard on open archival information systems (OAIS)?**

No ▾

**Does the digital preservation repository conform to the certification and audit criteria of the [ISO 16363](#) standard?**

No ▾

# Current Tools and Services

Please check all preservation services and tools that your organization currently uses. If you do not see something listed, please add it using free text in the Other box.

- |   |  |
|---|--|
| <input type="checkbox"/> ACE (Audit Control Environment)                          | <input type="checkbox"/> Duracloud                                     |
| <input type="checkbox"/> APPX Archives Enterprise Manager (AXAEM)                 | <input type="checkbox"/> Fedora  |
| <input type="checkbox"/> Archive-It   | <input type="checkbox"/> ICA-AtOM                                      |
| <input type="checkbox"/> Archivematica  | <input type="checkbox"/> Integrated Rule Oriented Data Systems (iRODS) |
| <input type="checkbox"/> BagIt  | <input type="checkbox"/> JHove   |
| <input type="checkbox"/> Chronopolis  | <input type="checkbox"/> LOCKSS  |
| <input type="checkbox"/> Contentdm Digital Collection Management Software by OCLC | <input type="checkbox"/> PLANETS                                       |
| <input type="checkbox"/> Curator's Workbench – Carolina Digital Repository        | <input type="checkbox"/> Preservica                                    |
| <input type="checkbox"/> DCAPE  | <input type="checkbox"/> Sharepoint                                    |
| <input checked="" type="checkbox"/> DoD 5015.2-STD- compliant software            | <input type="checkbox"/> Tessella Safety Deposit Box (SDB)             |
| <input type="checkbox"/> DRAMBORA   | <input type="checkbox"/> Other   |
| <input type="checkbox"/> DSpace   |  |

If Other

[« back to listing](#)

[Continue to survey »](#)

[Save for later](#) 



## 1. DIGITAL PRESERVATION POLICY

The organization charged with the responsibility of managing historical records should state its policy in writing, covering the following areas:

The policy should include the organization's commitment to digital preservation management and sustainability.

### Check all of the statements that apply to your organization's digital preservation policy.

- The organization does not have a digital preservation policy.
- The organization has a digital preservation policy.
- The organization has issued a digital preservation policy.
- The organization annually reviews its digital preservation policy.
- The organization arranges for the digital preservation policy to be appropriate.

## Digital Preservation Capability Self-Assessment

This Digital Preservation Capability Self-Assessment is comprised of fifteen components. Each component contains a short description and a series of statements. The statements are mapped to different capability levels that will be used to calculate a digital preservation index score for your organization and repository at the conclusion of the survey.

Please read carefully each component description and the threshold statements. Glossary terms and other support material are hyperlinked to the survey for easy access while you take the self-assessment. Then thinking about your organization and digital preservation repository, pick the statements that best characterize the current state of capabilities to manage, preserve and provide access to electronic records of permanent value.

Thank you for participating in the Digital Preservation Capability Self-Assessment.

[Click here to begin the survey](#)

# 1. DIGITAL PRESERVATION POLICY

The organization charged with ensuring preservation and access to long-term and permanent legal, fiscal, and/or historical records should state its policy in writing, communicate the policy to all [stakeholders](#), and periodically audit the policy for compliance.

The policy should include the purpose, scope, accountability, and approach to the transfer of records as well as address the operational management and sustainability of [trustworthy preservation repositories](#).

**Check all of the statements below that accurately describe the status of your organization with regard to a written and published digital preservation policy.**

- The organization does not have a written digital preservation policy.
- The organization has a digital preservation policy in development but it has not yet been approved or issued.
- The organization has issued a digital preservation policy and it is widely disseminated to stakeholders.
- The organization annually conducts a self-assessment and reports adherence to the digital preservation policy to its governing body.
- The organization arranges for a periodic peer review or external audit of the digital preservation policy and revises the policy as appropriate.

## 2. DIGITAL PRESERVATION STRATEGY

The organization charged with the preservation of long-term and permanent electronic records must proactively address risks associated with technology obsolescence. While no single strategy is appropriate for all organizations, data types and resources, there must be plans to periodically upgrade storage devices, storage media, and [file formats](#).

**Check all of the statements below that accurately describe the status of your organization with regard to a digital preservation strategy to mitigate technology obsolescence.**

- The organization does not have a formal strategy to address technology obsolescence.
- The strategy calls for accepting electronic records in [native formats](#) on an ad hoc basis and keeping the bit streams alive until software and other resources are available to transform the records into open standard technology neutral file formats.
- The strategy calls for encouraging Records Producers to convert electronic records of long-term and permanent value in their custody to ["preservation ready"](#) formats at or near the time of receipt and creation.
- The strategy includes ad hoc monitoring of changes in technologies that may impact digital records collections in the custody of Records Producers and the preservation repository.
- The strategy calls for [transformation](#) of selected native file formats to preferred preservation formats at [ingest](#) and proactive monitoring of changes in technologies that affect the preservation of electronic records.
- The strategy calls for the transformation of all electronic records in native file formats to [preferred preservation formats](#) at ingest. Electronic records in archival storage are automatically transformed to newer interoperable forms as they displace current ones.

Watch for CoSA MoVE-IT project report in **January 2021** to learn about issues and practices associated with transfer of state agency electronic records to state archives at:

<https://www.statearchivists.org/programs/state-electronic-records-initiative/move-it-modeling-viable-electronic-information-transfers/>



### 3. GOVERNANCE

The organization has a formal decision-making framework that assigns accountability and authority for the preservation of electronic records with long-term and permanent historical, fiscal, operational or legal value, and articulates approaches and practices for preservation repositories sufficient to meet stakeholder needs.

Governance is exercised in conjunction with information management and technology functions and other custodians and digital preservation stakeholders such as Records Producers and Users, and enables compliance with applicable laws, regulations, record retention schedules, and disposition authorities.

**Check all of the statements below that accurately describe the status of your organization's governance framework to specifically address preservation of permanent electronic records.**

- The organization's current [information governance](#) activities do not specifically address digital preservation requirements.
- The organization has a limited, project-based digital preservation governance framework that is operational or has been successfully completed.
- The organization is developing an enterprise governance framework that identifies roles and responsibilities for electronic records life cycle management and digital preservation.
- The organization has adopted an enterprise governance framework that assigns accountability and authority for the preservation of permanent electronic records.
- The organization has adopted an enterprise governance framework that specifies an on-going commitment to the sustainability of one or more preservation repositories.
- The enterprise governance framework supports one or more preservation repositories and is reviewed and updated at least every two years to take into account changing technologies and organizational requirements.

## 4. COLLABORATIVE ENGAGEMENT

Digital preservation is a multi-faceted discipline that takes into account the organization's information architecture and technology environment as well as accepted standards and best practices. An organization with a mandate to preserve electronic records is well served by maintaining and promoting collaboration among its many stakeholders.

Interdependencies between and among the operations of Records Producers, legal and statutory requirements, information technology policies and governance, and historical accountability should be systematically addressed.

**Check all of the statements below that accurately describe the status of collaborative engagement between your organization and its digital preservation stakeholders.**

- No collaborative digital preservation environment exists within or across the organization.
- The organization is currently working to establish a framework for collaborative engagement on electronic records management and digital preservation issues.
- Under its collaborative digital preservation framework the organization has successfully engaged or is currently engaged with selected stakeholder entities to proactively address digital preservation requirements.
- Under its collaborative digital preservation framework the organization has successfully engaged or is currently engaged in one or more collaborative digital preservation projects with external stakeholders.
- Under its collaborative digital preservation framework the organization has successfully engaged or is currently engaged with most stakeholders to proactively identify and meet their digital preservation requirements.
- The organization continuously monitors and updates its digital preservation collaboration framework to support proactive outreach to all stakeholders to identify and meet their digital preservation requirements.

## 5. TECHNICAL EXPERTISE

A viable digital preservation capability requires organizations to have sufficient expertise in electronic records management and digital preservation to support all of the infrastructure and requisite key preservation processes, including on-going professional development for personnel and certification of the repository.

Technical expertise may exist within internal or contracted staff, may be provided by a centralized service bureau, or by external service providers. In some instances this may involve processing surrogate SIPs and AIPs that contain some but not all of the ["Essential Properties"](#) of ISO 14721 conforming information packets.

**Check all of the statements below that accurately describe the status of your organization with regard to access to professional technical expertise in digital preservation and electronic records management.**

- The organization has little or no operational access to specialized professional technical expertise in digital preservation or electronic records management.
- The organization has access to internal or external professional technical expertise that supports only narrowly defined project-based digital preservation initiatives.
- The organization has access to internal or external professional technical expertise who assist Records Producers in the creation of preservation-ready records.
- The organization has access to internal or external professional technical expertise who support the processing of [surrogate SIPs](#) and [AIPs](#).
- The organization has access to internal or external professional technical expertise that supports all functions of an ISO 14721 preservation repository.
- The organization has access to internal or external professional technical expertise that supports all functions of an ISO 14721 preservation repository, including long-term digital preservation planning activities.



## 6. OPEN STANDARD TECHNOLOGY NEUTRAL FORMATS

A fundamental requisite for a sustainable digital preservation program that ensures long-term access to usable and understandable electronic records is mitigation of obsolescence of file formats. [Open standard technology neutral \("OS/TN"\) formats](#) are developed in an open, public setting, issued by a certified standards organization, and have few or no technology dependencies.

Current preferred OS/TN format examples include: [HTML](#), [Plain Text](#), [XML](#), [ODF](#), and [PDF/A](#) for text; [CSV](#) for spreadsheets; [JPEG 2000](#) for photographs; PDF/A, [PNG](#), and [TIFF](#) for scanned images; [SVG](#) for vector graphics; [WAVE\\_BWF LPCM](#) for audio; [MPEG-4](#) and [Motion JPEG 2000](#) for video; [WARC](#) for web pages.

Over time digital preservation tools and solutions will emerge that require new OS/TN file formats. OS/TN formats are backwardly compatible so they can support interoperability across technology platforms over an extended period of time.

**Check all of the statements below that accurately describe the status of your organization with regard to adoption of open standard technology neutral file formats.**

## 7. DESIGNATED COMMUNITY

The organization that has responsibility for preservation and access to long-term and permanent legal, operational, fiscal or historical government records is well served through proactive outreach and engagement with its Designated Community. The organization has written procedures and formal agreements with Records Producers that document the content, rights, and conditions under which the preservation repository will ingest, preserve, and provide access to electronic records.

The organization maintains written procedures regarding ingest of electronic records and access to its digital collections. Records Producers submit fully conforming [ISO 14721](#) Submission Information Packages (SIPs) while [Dissemination Information Packages \(DIPs\)](#) are developed and updated in conjunction with its User communities.

**Check all of the statements below that accurately describe the relationship of your organization to records producing units and users.**

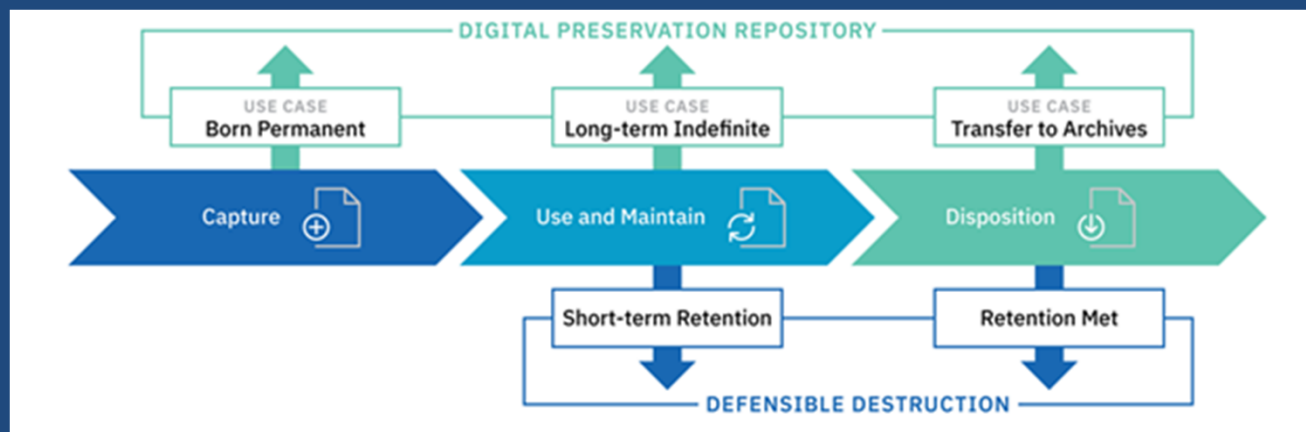


## 8. ELECTRONIC RECORDS SURVEY

All public and private organizations are responsible for records created, received or acquired that are evidence of its business activities, regardless of the format or media used. They have an obligation to ensure the [authenticity](#), [integrity](#), usability and reliability of the records for as long as they are required.

A preservation repository cannot fully execute its mission or engage in realistic digital preservation planning without a projected volume and scope of electronic records that will come into its custody. It is likely that some information exists in approved retention schedules but may require further elaboration as well as periodic updates, especially with regard to preservation ready, near-preservation ready, and legacy electronic records held by Records Producers.

**Check all of the statements below that accurately describe the status of your organization's knowledge about permanent electronic records that will be transferred to the preservation repository.**

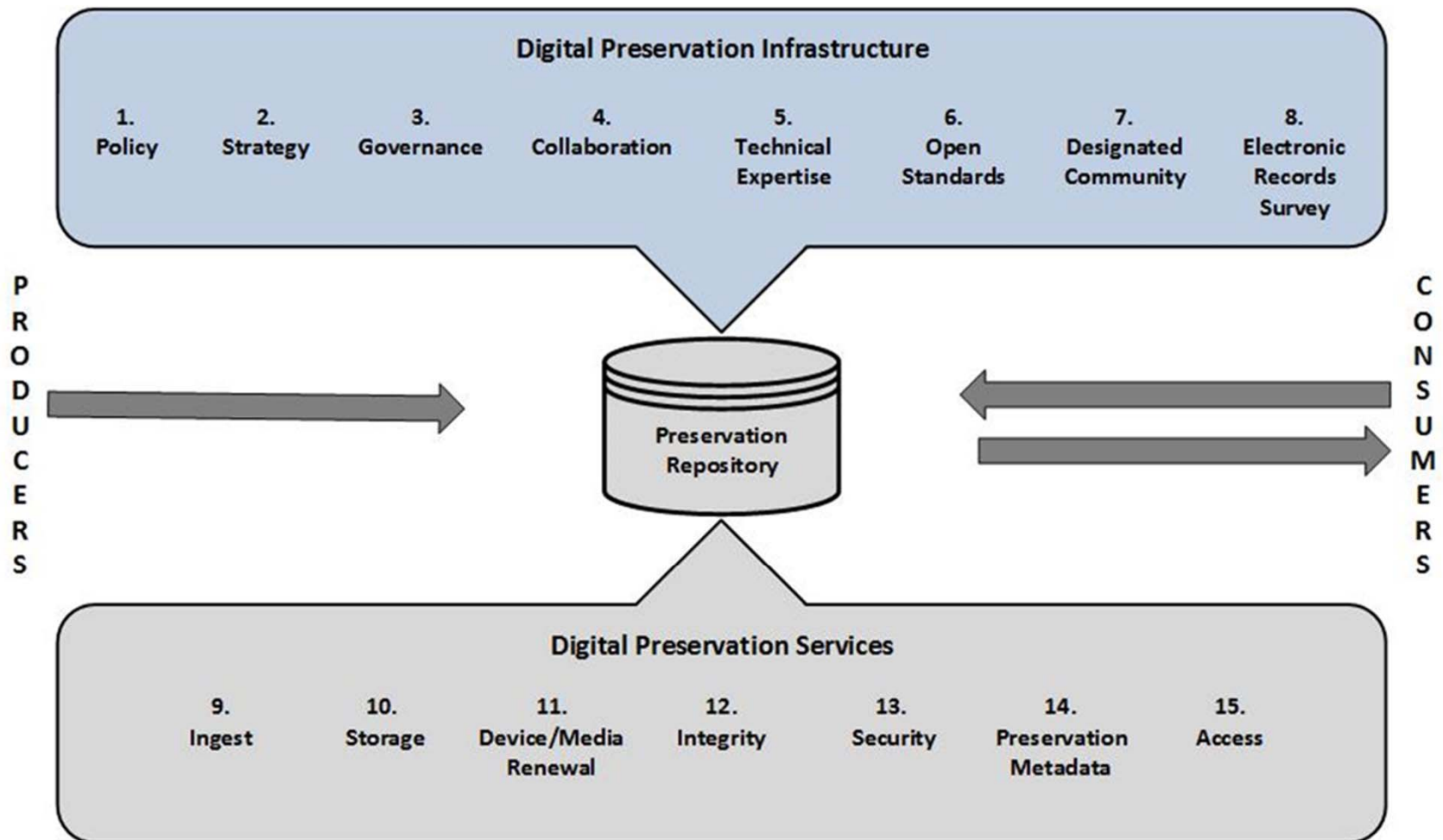


Vision for integrating digital preservation into the electronic records life

# Comparison of ECM/RM, Business Applications, Storage and Backup, and Digital Preservation Systems

Enterprise Content and Records Management	Special Purpose Application/Business Systems	Network Storage and Backup	Digital Preservation System
Accepted Industry Practices or DoD 5015.2 Compliant	Accepted Industry Practice	Accepted Industry Practice	Conforms to ISO 14721
Content collaboration (retrieval), policies, version control, self-healing, retention and disposition	Content collaboration (retrieval), version control, and self-healing	Storage using accepted industry tools, including tiered storage management, multiple copies, and self-healing	Long-term availability, usability, and trustworthiness of digital content
Bit level storage	Bit level storage	Bit level storage	Bit level storage, protection against file format obsolescence, integrity protection, preservation metadata
Short-term retention (< 10 years)	Short-term retention (< 10 years)	Long-term retention (> 10 years)	Long-term and permanent retention (> 10 years)

# Digital Preservation Services



# Output – Scorecard & Survey Responses

## Digital Preservation Capability Self-Assessment

Name: NIRMA Member #123  
 Title: Records Manager  
 Organization: Hypothetical License Operator  
 Location: Multiple facilities in United States  
 Repository: ECM/RMA - Commercial software certified to DoD 5015.2  
 Contributors: Lori Ashley & Charles Dollar for the 2016 NIRMA Conference presentation "Protecting Long-Term Digital Records Using a Capability Maturity Model Approach" - August 9, 2016

Index Score Results	Nominal (0)	Minimal (1)	Intermediate (2)	Advanced (3)	Optimal (4)
DIGITAL PRESERVATION POLICY	●				
DIGITAL PRESERVATION STRATEGY		●			
GOVERNANCE			●		
COLLABORATIVE ENGAGEMENT		●			
TECHNICAL EXPERTISE		●			
OPEN STANDARD TECHNOLOGY NEUTRAL FORMATS		●			
DESIGNATED COMMUNITY	●				
ELECTRONIC RECORDS SURVEY		●			
INGEST	●				
ARCHIVAL STORAGE			●		
DEVICE/MEDIA RENEWAL					●
INTEGRITY	●				
SECURITY	●				
PRESERVATION METADATA	●				
ACCESS	●				

### Index Score: 13/60

Based on your responses, the digital preservation capabilities and services of your organization and repository fall into the **Minimal** level. Digital preservation capabilities are rudimentary and most electronic records that merit long-term retention are at risk.

This scorecard indicates the current capabilities of the Archives/RM Capability Maturity Model. The filled in circles (red, orange, yellow, ) respective requirements have been met.

### 1. DIGITAL PRESERVATION POLICY

The organization charged with ensuring preservation and access to long-term and permanent legal, fiscal, and/or historical records should state its policy in writing, communicate the policy to all stakeholders, and periodically audit the policy for compliance. The policy should include the purpose, scope, accountability, and approach to the transfer of records as well as address the operational management and sustainability of trustworthy preservation repositories.

- The organization does not have a written digital preservation policy.
- The organization has a digital preservation policy in development but it has not yet been approved or issued.
- The organization has issued a digital preservation policy and it is widely disseminated to stakeholders.
- The organization annually conducts a self-assessment and reports adherence to the digital preservation policy to its governing body.
- The organization arranges for a periodic peer review or external audit of the digital preservation policy and revises the policy as appropriate.

### 2. DIGITAL PRESERVATION STRATEGY

The organization charged with the preservation of long-term and permanent electronic records must proactively address risks associated with technology obsolescence. While no single strategy is appropriate for all organizations, data types and resources, there must be plans to periodically upgrade storage devices, storage media, and file formats.

- The organization does not have a formal strategy to address technology obsolescence.
- The strategy calls for accepting electronic records in native formats on an ad hoc basis and keeping the bit streams alive until software and other resources are available to transform the records into open standard technology neutral file formats.
- The strategy calls for encouraging Records Producers to convert electronic records of long-term and permanent value in their custody to "preservation ready" formats at or near the time of receipt and creation.
- The strategy includes ad hoc monitoring of changes in technologies that may impact digital records collections in the custody of Records Producers and the preservation repository.

# Call to Action

- Business case development for new or upgraded systems
- Planning for legacy application decommissioning
- Develop preservation and transfer requirements for new technology
- Digitization projects (paper to digital and film to digital)
- File classification and defensible disposition initiatives
- File and systems migrations, e.g., Office 365
- Business reorganization, mergers, consolidations and acquisitions
- Employee onboarding and training
- Succession planning and leadership changes
- COVID-19 (or any other crisis/disaster) response and recovery initiatives
- Legal, regulatory, compliance or risk-related breaches or audits

# DPCMM USE CASES

US Council of State Archivists (CoSA)

The Council of State Archivists (CoSA) is the only national nonprofit association serving exclusively the country's 56 state and territorial archives by advancing their needs to stakeholders and the public.



**SERI**

**State Electronic Records Initiative**

- Phase 1: Create a more detailed profile of the status of state electronic records programs
- This profile or snapshot in time will provide the necessary data from which to develop an action plan that addresses needs and identifies next steps



# Retention Schedule Example: Permanent Records

## STATE AGENCY RECORDS RETENTION SCHEDULE

Series	Records Title and Description	Function and Use
U0243	Capital Construction Disbursements and Receipts File	This series documents the disbursement of undertaking which is to be financed or fund federal funds; (b) any undertaking which is construction item, or combination of items r equipment estimated to cost \$200,000 or r item of movable equipment if the total cost upgrade, or replacement of an information l the Capital Planning Advisory Board of the as to state spending for capital projects.
	Access Restrictions	None
	Contents	Series may contain: Date of progress paym It also may contain supporting documentati
	Retention and Disposition	Retain permanently in creating unit

Retain permanently  
in creating unit

Retain in Agency  
until disposition  
trigger; transfer to  
State Archives

04560	Governor's Executive Order File - Miscellaneous - (Includes employment contracts, court orders, non-merit appointments, paroles, re-organizations, special notaries) (V)	This series documents the written action or order of the Governor, which has the force of law, and which is based upon his authority as the chief executive of the Commonwealth. The state's Constitution requires that the Secretary of State receive the original order signed by the Governor. After signature by the Secretary of State, the state seal is then affixed. This series incorporates orders categorized as miscellaneous. These include Writs of Habeas Ad Testificandum/Ad Prosequendam, court orders, employment contracts, non-merit position appointments, conditional releases, paroles, special commission notaries, re-organization of executive branch offices, activation of the National Guard, resignations, and removals from office. The orders are initially created by the General Counsel, Office of the Governor. Much of the reference activity to Executive Orders is by courts requiring certification of the official acts of the state. This series reflects original signatures not included in the Executive Journal (04564).
	Access Restrictions	None
	Contents	Series contains: Original order; supporting documentation
	Retention and Disposition	Retain in Agency four (4) years after the end of the gubernatorial term; transfer to State Archives Center for permanent retention

# What is the status of your Electronic Records Program?

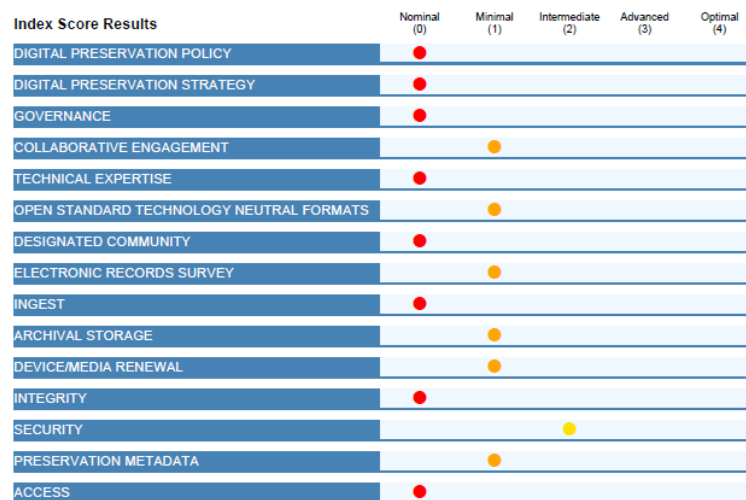
- **In a 2011 self-assessment (written response and telephone interviews):**
  - **5 – 9%** - Have an electronic records program that addresses all stages of the life cycle
  - **17 – 30%** - Have an electronic records program, but it does not address all stages of the life cycle
  - **20 – 35%** - Have started an electronic records program, but little or nothing has been implemented
  - **15 – 26%** - Have not yet begun tackling electronic records

# Informal Assessment using DPCMM

- The “combined composite digital preservation score for all 48 responding organizations is 3, which is at the lower end of a Minimal Digital Preservation Capability score.”
- “Almost one-half (21) of the responding states/territories (48) registered an absolute Nominal digital preservation capability index score on each of the fifteen key process areas.”

# What a Difference Three Years Can Make

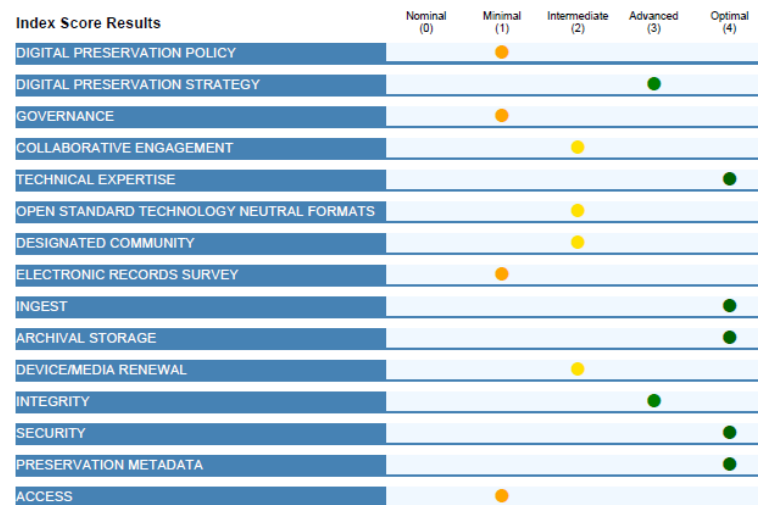
## 2012 DPC SELF-ASSESSMENT SCORECARD



Index Score: 8/60

Based upon your responses, the digital preservation capabilities and services of your archive/records management unit falls into the 1 Stage (Minimal). Digital preservation capabilities are rudimentary and most electronic records that merit long-term retention are at risk.

## 2015 DPC SELF-ASSESSMENT SCORECARD



Index Score: 38/60

Based upon your responses, the digital preservation capabilities and services of your archives/records management unit falls into the 3 Stage (Advanced). The organization has a robust infrastructure and the preservation of electronic records is framed within a collaborative environment and few electronic records that merit long-term preservation are at risk.

# Texas State Library and Archives Commission Launches Texas Digital Archive

Wednesday, January 20, 2016 • Austin, TX • News Release

**AUSTIN, TX** – The Texas State Library and Archives Commission (TSLAC) announces the launch of the Texas Digital Archive (TDA), a searchable online repository designed to manage, preserve, and provide access to the electronic records collections held at the Texas State Archives. Virtual visitors are invited to explore our shared heritage through digitized prints, photographs, documents and manuscripts made available through a \$706,593 appropriation for the 2016-2017 biennium from the 84<sup>th</sup> legislative session.



TEXAS STATE LIBRARY  
AND  
ARCHIVES COMMISSION

## TEXAS DIGITAL ARCHIVE



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[description](#)



Prints and Photographs  
[description](#)



Texas Governor Rick Perry  
[description](#)

<https://www.tsl.texas.gov/texasdigitalarchive>



# A Collaborative Effort to Plan a Digital Preservation Program at a Small Library

Fatemeh Rezaei and Laura Bell, Special Collections & Archives, RLB Library | University of Baltimore



## BACKGROUND & PROJECT OVERVIEW

The Robert L. Bogomolny (RLB) Library at the University of Baltimore serves a public undergraduate, graduate, and professional university community located in Maryland's largest city. UB provides education in business, law, public affairs, and the applied arts and sciences. The RLB Library includes 25 faculty and staff, and 6 departments including Special Collections & Archives, Integrated Digital Services, Reference, Access Services, Academic Success, and Administration.



In 2017, Metadata and Digital Curation Librarian, Maggie Dull assessed the Library for digital preservation readiness using the *Survey of Institutional Readiness* created by Digital Preservation Management. Implementing Short Term Strategies for Long Term Problems. Ms. Dull provided her assessment in her internal report, *Assessing Digital Curation and Preservation Readiness at the University of Baltimore's Langsdale Library* (named before the Library's name changed in 2018).

### The 2017 report showed within the Library:

Strengths	Weaknesses
Staff interested in building a long-lasting digital preservation program	Policies and documentation
A significant amount (25 TB) of existing digitized or born digital collections in addition to audiovisual collections in need of digitization and preservation	Specific resources designated for digital preservation
Administrative support for the investigation of a digital preservation program	The Library has multiple software and tools used to make digital content accessible, but does not have the infrastructure in place for preservation

Based on the amount of digital data we currently have, and the amount we will produce and maintain in the future, the Library needs a digital preservation program. However, as Ms. Dull's report also showed, while the Library is strong in collections, it is weak in terms of policies and technological infrastructure needed to build a digital preservation program.

The question became: **how do we plan and build a digital preservation program at the RLB Library?**

## PROJECT OBJECTIVES

- Gain support for a digital preservation program at the RLB Library
- Create a Task Force to investigate and plan a digital preservation program
- Include digital preservation in the Mission and Vision Statements of the Library
- Begin a 5 year plan to build a digital preservation program in the Library



## ACTIONS TAKEN

### Using the Digital Preservation Capability Maturity Model (DPCMM)

- In 2018 Fatemeh Rezaei, Archivist and Kristin Conlin, Reference Librarian used the *Digital Preservation Capability Maturity Model (DPCMM)* to further assess the Library's capacity for a digital preservation program.
- The DPCMM, created by Charles Dollar and Lori Ashley, is a framework that helps organizations to assess their ability to provide long-term preservation of digital collections by using 15 components: policy, strategy, governance, collaboration, technical expertise, open source/neutral formats, designated community, electronic records survey, ingest, storage, device/media renewal, integrity, security, metadata, and access. The assessment allows the Library to determine their place in the DPCMM Five Stages of Digital Preservation Capability, which range from Nominal to Optimal, with nominal indicating records are most at risk.
- The DPCMM assessment tool provided the RLB Library with a baseline understanding of where and how the Library can begin to build a digital preservation program.

Robert L. Bogomolny Library	Nominal (N)	Minimal (M)	Intermediate (I)	Advanced (A)	Optimal (O)
Digital Preservation Policy	X				
Digital Preservation Strategy	X				
Governance	X				
Collaboration		X			
Technical Expertise	X				
Open Standard Technology Neutral Formats (OST/NF)		X			
Designated Community	X				
Electronic Records Survey	X				
Ingest	X				
Archival Storage	X				
Media/Device Renewal	X				
Integrity	X				
Security	X				
Preservation Metadata	X				
Access	X	X			

Capability Index Score of 3/90 Stage 1: Minimal Digital Preservation Capacity  
Digital Preservation Capability Self-Assessment Scorecard based on the DPCMM

### Meeting with Library Leadership:

The DPCMM results were compiled into an internal report and the team investigating digital preservation in the Library grew to include Laura Bell, Archivist. We met with Library leadership in December 2018 in order to:

- Educate our stakeholders about digital preservation
- Share the results of the DPCMM assessment and discuss the need for a digital preservation program at the Library
- Communicate across departments in the Library in order to work towards a mutually beneficial goal
- Suggest a long-term plan and collaborative task force

DPCMM Components	Current Capabilities	Year 1	Year 2	Year 3	Year 4	Year 5
Policy	1	2	3	4	5	6
Strategy	1	2	3	4	5	6
Governance	1	2	3	4	5	6
Collaboration	1	2	3	4	5	6
Technical Expertise	1	2	3	4	5	6
Open Standard Technology Formats	1	2	3	4	5	6
Designated Community	1	2	3	4	5	6

The RLB Library's Digital Infrastructure Improvement Plan based on the outcomes of the DPCMM

## ONGOING WORK

- Drafting a digital preservation policy
- Increased collaboration and growth of the Task Force: 2 archivists, 1 reference librarian, 2 systems librarians
- Learning from the digital preservation community
- Gaining technological support and building relationships with university IT department
- Learning about technological requirements
- Assessing and selecting digital preservation tools and creating a workflow



## FUTURE STEPS

- Finalize our digital preservation policy and our workflow by January 2020
- Add digital preservation to the long-term goals of the Library
- Assess the Library using the *NDSA Levels of Preservation*
- Run the DPCMM again to assess our progress on our 5 year plan

## LESSONS LEARNED

A digital preservation program is an ongoing endeavor that requires constant attention and support. When building this kind of program at a smaller library, collaboration is key! Using the DPCMM to start a conversation and provide the opportunity for library stakeholders to learn more about digital preservation was a valuable step toward gaining support for this initiative. We have learned from others working on digital preservation in the field already and are excited to continue learning. In the future, we hope to partner with other smaller colleges in our area in order to collaboratively discuss and address the issue of building digital preservation programs at smaller institutions.

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Digital Preservation Management, *Implementing Short-Term Strategies for Long-Term Problems: Digital Preservation Management Workshop*. <https://www.diglib.org/wp-content/uploads/downloads/2012/08/digital-preservation-management-workshop-2012.pdf>

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# Croatian Government Agency (analog to US FDA)

Score – 32/60

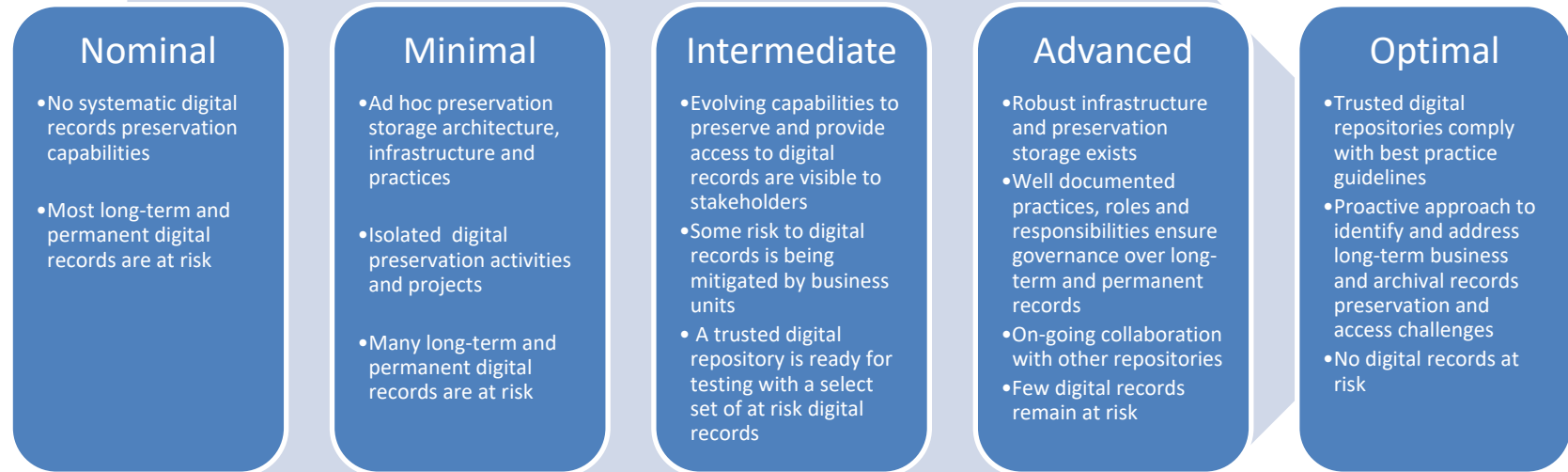
Grade	Components	Possible recommendations
Nominal	-	-
Minimal	DP strategy	<ul style="list-style-type: none"> <li>to consolidate DP strategy and include it in the strategic plan</li> </ul>
	Governance	<ol style="list-style-type: none"> <li>to develop organizational enterprise governance framework</li> </ol>
	Open standards	<ul style="list-style-type: none"> <li>to adopt more open and neutral standards for file formats and automate their file format conversions</li> </ul>
	e-records survey	<ul style="list-style-type: none"> <li>to develop and maintain an analytical module that will support planning DP and initiate DP activities</li> </ul>
Intermediate	DP policy	<ol style="list-style-type: none"> <li>to create self-assessment tool for checking adherence to HALMED's DP policy and to include findings in annual management review process</li> </ol>
	Collaborative engagement	<ul style="list-style-type: none"> <li>to establish collaboration with more stakeholders</li> </ul>
	Archival storage	<ul style="list-style-type: none"> <li>to examine possibilities to use two geographically dispersed repositories</li> </ul>
	Device/media renewal	<ul style="list-style-type: none"> <li>to document broad renewal policy (not just optical media migration)</li> </ul>
	DP metadata	<ul style="list-style-type: none"> <li>to implement PREMIS</li> <li>to examine possible serializations</li> </ul>
	Access	<ul style="list-style-type: none"> <li>to develop various dissemination packages according to user types</li> </ul>
Advanced	Technical expertise	<ul style="list-style-type: none"> <li>to persist with education and training</li> <li>to collaborate with the Faculty of Humanities and Social Sciences of Zagreb University</li> </ul>
	Designated community	<ul style="list-style-type: none"> <li>to map all records producers (internal and external) and to collaborate more intensely with them</li> <li>to establish dissemination information packages profiles</li> </ul>
	Ingest	<ul style="list-style-type: none"> <li>to standardize metadata file further</li> <li>to include file format conversion procedures for more file formats</li> </ul>
	Integrity	<ul style="list-style-type: none"> <li>to support the integrity additionally with "archivists-friendly technologies" (e.g. blockchain technology)</li> </ul>
Optimal	Security	<ul style="list-style-type: none"> <li>to continue with measures aimed at reducing the risks</li> </ul>



Digital Preservation Capability Assessment: City of Toronto	Nominal (0)	Minimal (1)	Intermediate (2)	Advanced (3)	Optimal (4)
Policy		1			
Strategy	0				
Governance	0				
Collaboration Engagement		1			
Technical Expertise		1			
Technology Neutral Formats		1			
Designated Communities		1			
Digital Asset Survey		1			
Ingest	0				
Storage Management	0				
Planned Device/Media Renewal		1			
Integrity	0				
Security		1			
Preservation Metadata	0				
Access		1			

# 2010 – City of Toronto

## Stages of Digital Preservation Capability



## Capability Component Priorities based on LTDP Strategy

### YEAR ONE & YEAR TWO

**Infrastructure** POLICY...COLLABORATION...GOVERNANCE...TECHNICAL EXPERTISE

**Processes** DIGITAL ASSET SURVEY... DESIGNATED COMMUNITIES

### YEAR THREE & YEAR FOUR

**Infrastructure** COLLABORATION...GOVERNANCE... DESIGNATED COMMUNITIES...TECHNOLOGY NEUTRAL FORMAT

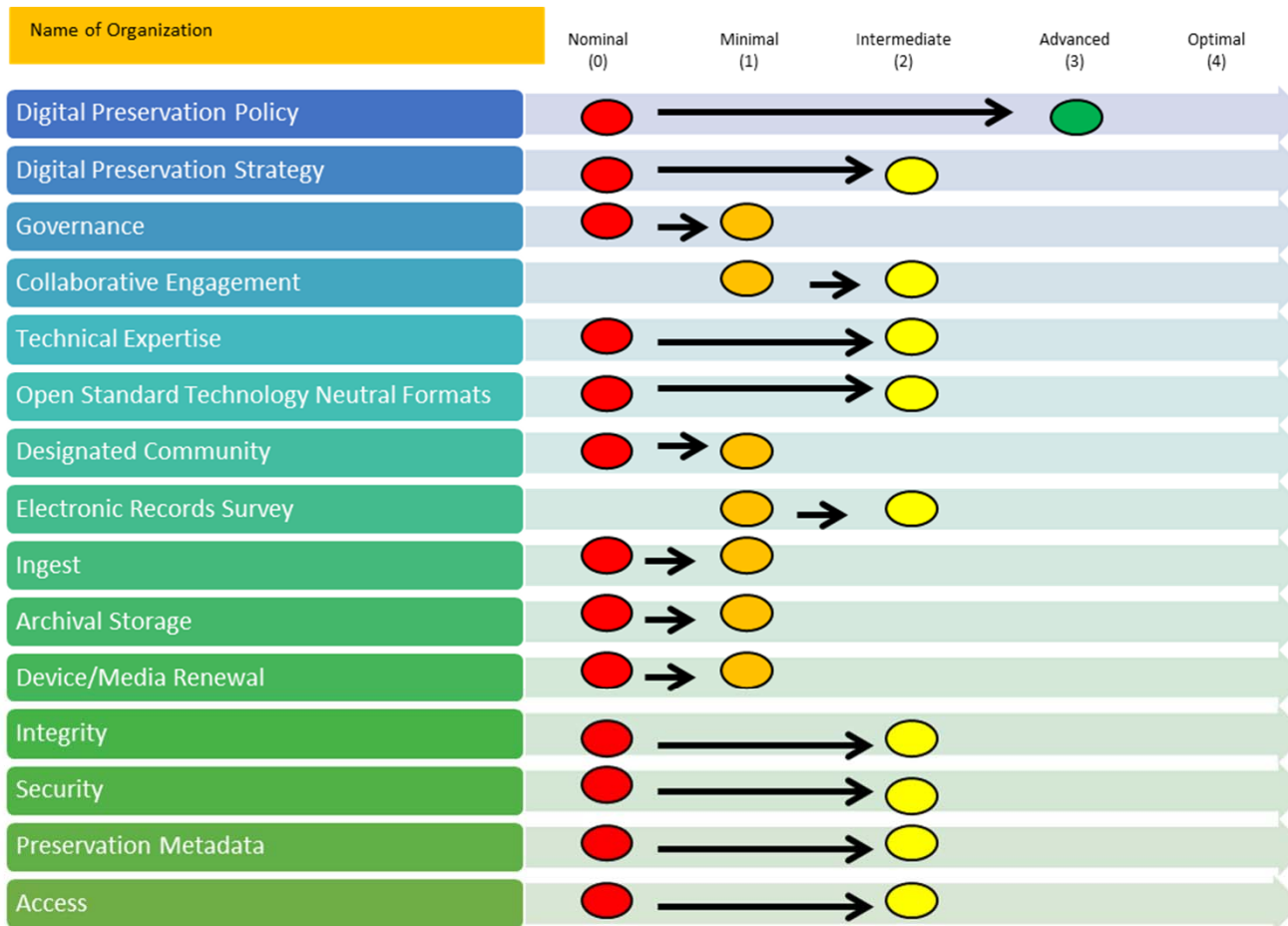
**Processes** MEDIA & DEVICE RENEWAL...INGEST... ARCHIVAL STORAGE...PRESERVATION METADATA

### YEAR FIVE & BEYOND

**Infrastructure** GOVERNANCE...COLLABORATION...STRATEGY...POLICY...TECHNICAL EXPERTISE... OPEN SOURCE SOFTWARE

**Processes** DIGITAL ASSET SURVEY ...INGEST...INTEGRITY...SECURITY...PRESERVATION METADATA ... ACCESS

# Vision for Improved Digital Preservation Capability



**From Minimal to Intermediate Capability within a three year period – our VISION for incremental progress**

# Summary – This I Believe

- Digital preservation is a lifecycle management concern and a shared responsibility
- Digital preservation requires the skills, expertise, and cooperation of cross-functional stakeholders
- It is possible to deconstruct aspects of digital preservation to a level that is:
  - readily understood
  - can enable dialogue and planning for implementation within the available resources of most organizations

# Resources

- Library of Congress – Sustainability of Digital Formats
  - <https://www.loc.gov/preservation/digital/formats/intro/intro.shtml>
- NARA Digital Preservation Framework
  - <https://github.com/usnationalarchives/digital-preservation>
- NDSA Levels of Digital Preservation
  - <https://ndsa.org//publications/levels-of-digital-preservation/>
- Digital Preservation Coalition
  - Handbook - <https://www.dpconline.org/handbook>
  - Rapid Assessment Model - <https://www.dpconline.org/docs/miscellaneous/our-work/dpc-ram/2006-dpc-ram-v-1-0/file>

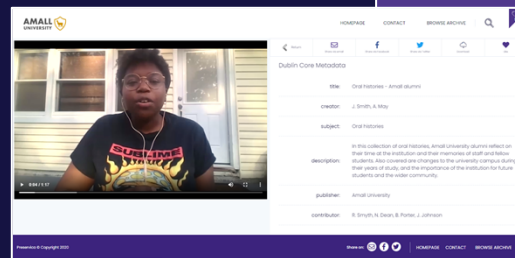
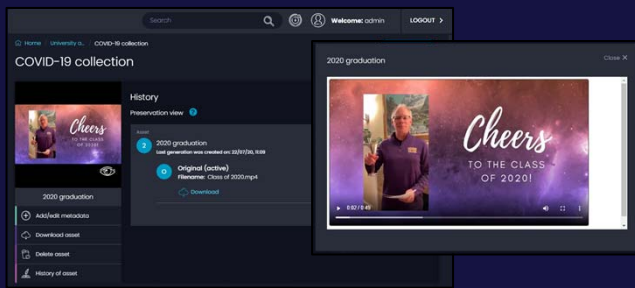
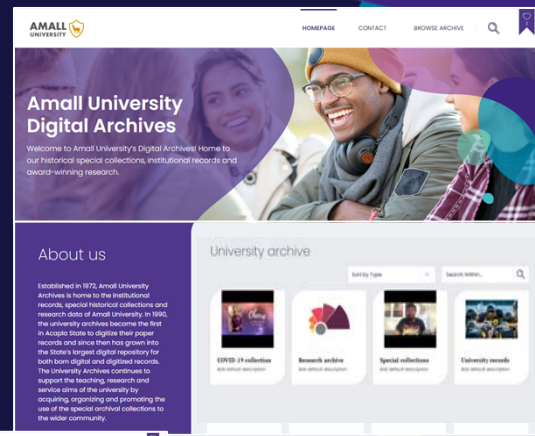
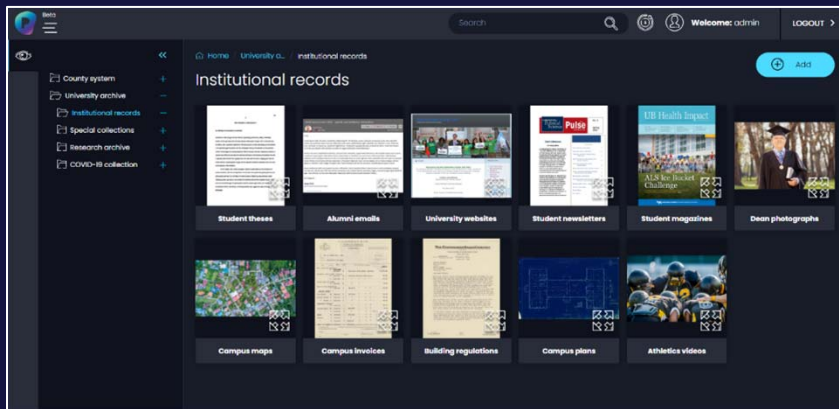
# Resources authored by LAshley

- Brochure - Why digital preservation matters to records managers
- Essential Guide – Preserving electronic government records
- White paper - Integrate Digital Preservation into Your Information Governance Program (published in ARMA Canada Sageesse, Winter 2020)

These materials have been provided as PDFs to the ARMA Greater Columbus chapter for sharing along with this presentation deck.

# Coming soon.... digital preservation for every archive

Learn more at [preservica.com/startyourjourney](https://preservica.com/startyourjourney)





*Without preservation  
there is no access*

Thank you for your time and attention.



Lori Ashley

[lori.ashley@preservica.com](mailto:lori.ashley@preservica.com)

[www.DigitalOK.org](http://www.DigitalOK.org)

*Please contact me with  
questions, feedback, and for  
additional DP resources*