A Digital Preservation Maturity Model in Action

This presentation describes a Digital Preservation Capability Maturity Model (DPCMM) that employs performance metrics based on specifications of ISO 14721, TRACC, and other good practices.

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ISO Audit and Certification of Trustworthy Digital Repositories, the Primary TDR Accreditation Board (PTAB), and IT Assessment Methodologies

- David Giaretta, Director - Alliance for Permanent Access
- Bob Rogers, CTO - Application Matrix
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Lori Ashley & Charles Dollar

PASIG          Austin, TX  

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What We Bring to the DP Dialogue

- Independent records management consultants for public, private and not-for-profit organizations
- Experience in archives management and long-term preservation
- Business/regulatory strategy and organizational development
- Members of ARMA, AIIM and SAA
Records Preservation Value

- Each organization is responsible for records created, received or acquired that are evidence of its business activities, regardless of the format or media used, and must ensure the records’ authenticity, integrity, usability and reliability for as long as they are required.

- Based on business, legal/regulatory and operational requirements as well as current and potential usefulness.

- Appraisal decisions include a number of factors, including:
  - the records’ provenance and content
  - authenticity and reliability
  - order and completeness
  - condition and costs to preserve them
  - intrinsic value to the organization and its stakeholders
Client and Peer Lamentations

- Archivists and Records Managers
- Resource allocators and C-level decision makers
- Technology solution providers and IT support staff
Inspiration

Organizational Records Management Model

Stage 1
Creating Organizational RM Awareness

Stage 2
Building the Organizational RM Foundation

Stage 3
Planning/Piloting Organization-wide ERM

Stage 4
Implementing Organization-wide ERM

Stage 5
Enhancing Organization-wide RM
Stages of Capability

- **Stage 5**
  - **Optimal** Digital Preservation Capability
  - Evaluate Stage 4 changes. Leverage for Stage 5.

- **Stage 4**
  - **Advanced** Digital Preservation Capability
  - Evaluate Stage 3 changes. Leverage for Stage 4.

- **Stage 3**
  - **Intermediate** Digital Preservation Capability
  - Evaluate Stage 2 changes. Leverage for Stage 3.

- **Stage 2**
  - **Minimal** Digital Preservation Capability
  - Evaluate Stage 1 changes. Leverage for Stage 2.

- **Stage 1**
  - **Nominal** Digital Preservation Capability
Digital Preservation CMM

1. Policy
2. Strategy
3. Governance
4. Collaboration
5. Technical Expertise
6. Open Sources/Neutral Formats
7. Designated Community

Digital Preservation Infrastructure

Producers

Trustworthy Digital Repository

Users

Digital Preservation Processes

8. Electronic Records Survey
9. Ingest
10. Storage
11. Device/Media Renewal
12. Integrity
13. Security
14. Metadata
15. Access
Infrastructure Elements

1. Policy
2. Strategy
3. Governance
4. Collaboration
5. Technical Expertise
6. Open Source Neutral Formats
7. Designated Community
2. Strategy

- A comprehensive digital preservation strategy stipulates the processes and activities that will be uniformly and consistently executed to implement the digital preservation policy and ensure the integrity, usability and reliability of electronic records.

- Among the topics that a digital preservation strategy should address are collaboration, how to deal with technology obsolescence (including legacy file formats and storage media), integrity protection, and access requirements.
## Strategy Metrics

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>A written strategy does not exist or if it exists it is not yet implemented.</td>
</tr>
<tr>
<td>1</td>
<td>Digital preservation strategy is in place that 1) keeps the bit stream of electronic records alive through planned device/media renewal, and 2) retains electronic records in their native format with the expectation that new software will be developed to support native formats. Viewer technology is used to support access.</td>
</tr>
<tr>
<td>2</td>
<td>Digital preservation strategy is in place that 1) keeps the bit stream of electronic records alive through planned device/media renewal, 2) supports preservation-ready records, and 3) supports transformation of records in one native format to a technology neutral open standard format.</td>
</tr>
<tr>
<td>3</td>
<td>Digital preservation strategy is in place that 1) keeps the bit stream of electronic records alive through planned device/media renewal, 2) supports preservation-ready records, and 3) supports transformation of records in three native formats to technology neutral open standard formats.</td>
</tr>
<tr>
<td>4</td>
<td>Digital preservation strategy is in place that 1) keeps the bit stream of electronic records alive through planned device/media renewal, 2) supports preservation-ready records, 3) transforms all electronic records to available technology neutral open standards formats, and 4) anticipates changes through a continuous program of monitoring changes and modifications as technologies evolve. The strategy services as a model for other digital preservation programs.</td>
</tr>
</tbody>
</table>
Records Readiness DEFINED

- Preservation-Ready
  - Interoperable open standard format
  - Interoperable open standard metadata
- Near Preservation-Ready
  - Vendor supplied conversion tool
  - Third party plug-ins
- Legacy
  - Proprietary format
  - No export functionality
Process Elements

8. Electronic Records Survey
9. Ingest
10. Storage
11. Device/Media Renewal
12. Integrity
13. Security
14. Metadata
15. Access
Electronic Records Survey

- Organizations should proactively address digital preservation as close to the time of electronic records creation or capture as practicable.

- Requires a comprehensive inventory of electronic records.

- Collaborative working relationships between stakeholders are key.
Value | Description
---|---
0  | No records survey protocol is in place to identify the scope (volume, location, and state of preservation readiness) of long-term electronic records (records that have an authorized retention period of ten or more years) for which the organization has a responsibility to preserve.

1  | A surrogate digital repository draws upon a records survey protocol that is in place or is being implemented that involves an ad hoc analysis of descriptions of electronic records based on information (volume, location, media type, lifecycle requirements, and state of preservation readiness) collected in interviews and surveys or other sources. This protocol does not address a retrospective analysis of existing records retention schedules.

2  | A surrogate digital repository or a partially implemented ISO 14721-based repository draws upon a records survey protocol that is in place and that focuses on the collection of information about the volume, location, media type, and preservation readiness of a selected body (less than 50%) of electronic records based upon risk assessments, including a retrospective analysis of existing records retention schedules. The information is systematically analyzed and managed as an inventory that supports the capability of records Producers to transfer eligible electronic records to the digital repository as part of the lifecycle management of electronic records.

3  | A fully implemented ISO 14721-based digital repository draws upon the records survey protocol is in place that extends the collection of information about the volume, location, media type, and preservation readiness of electronic records to a selected body (more than 50% but less than 90%) of existing records collections based upon risk assessments, business and stakeholder requirements, and the public interest. The information is systematically analyzed and managed as an inventory that supports the capability of records Producers to transfer eligible electronic records and for the digital repository to plan for future ingest requirements as part of the lifecycle management of electronic records.

4  | A fully implemented ISO 14721-based digital repository draws upon the records survey protocol that is in place and extends the collection of information about the volume, location, media type, and preservation readiness of electronic records to all existing (<90%) records collections. The information is systematically analyzed and managed as an inventory that supports the automated transfer and ingest of eligible electronic records. The information is systematically analyzed and entered into an inventory that Producers of the electronic records can use to automatically transfer eligible electronic records to the trustworthy digital repository as part of the lifecycle management of the records. This long-term electronic records inventory is updated as frequently as required but no less than once every two years.
DPCMM Strengths

- Breaks digital preservation into clearly defined components
- Enables the setting of priorities based on risk, requirements and resources
- Supports incremental improvement
- Documents and celebrates progress and accomplishments
- Establishes business case for additional resources
- Can provide basis for virtualized preservation services
Council of State Archivists (CoSA)

- LSTA grant from Indiana State Library in cooperation with Indiana State Archives
- Collect data in surveys and telephone interviews with state/territory Archives
- Support comprehensive profile of the status of electronic records management programs
- Use composite profile along with profiles of selected states to develop high priority needs and recommendations for follow-on actions
<table>
<thead>
<tr>
<th>Name of Organization:</th>
<th>Nominal (0)</th>
<th>Minimal (1)</th>
<th>Intermediate (2)</th>
<th>Advanced (3)</th>
<th>Optimal (4)</th>
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<tbody>
<tr>
<td>Date:</td>
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<td>1-Policy</td>
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<td>2-Strategy</td>
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<td>3-Governance</td>
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<td>4-Collaboration</td>
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<td>5-Technical Expertise</td>
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<td>6-Open Source/Neutral Formats</td>
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<td>7-Designated Community</td>
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<td>8-Electronic Records Survey</td>
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<td>9-Ingest</td>
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<td>10-Storage</td>
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<td>11-Device/Media Renewal</td>
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<td>12-Integrity</td>
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<td>13-Security</td>
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<td>14-Preservation Metadata</td>
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<td>15-Access</td>
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</table>
Almost one half of respondents registered an absolute Nominal capability score on each of the 15 key elements.

Removing these 21 state/territory Archives means the remaining respondents scored nearly 6 – still at the low end of the Minimal capability range.
Public Sector – Major North American City

- Phase 1 - Digital Preservation Problem Definition and Best Practices
- Phase 2 – Digital Preservation Needs Assessment
- Phase 3 – Long-Term Digital Information Preservation Strategy
  - People
  - Process
  - Technology
### Digital Preservation Capability Improvement Road Map

<table>
<thead>
<tr>
<th>Reference Model Components</th>
<th>Current Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Difficulty</th>
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<td>Difficulty</td>
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<td>Ingest</td>
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<td>Media &amp; Device Renewal</td>
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<td></td>
<td>2</td>
<td></td>
<td>MEDIUM</td>
</tr>
</tbody>
</table>
Additional Use Cases

- United Nations agency
- Delaware State Library and Archives
- Georgia State Archives
- e-Depot – Ministry of Justice
- NDIPPP Research Project – state government info
- Federal cultural memory institution
- Archdiocese
- Corporation – pharmaceutical industry
- Corporation – manufacturing
- Clayton State University – MAS Program/DP course
Thank you!

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We welcome your interest and feedback on the Digital Preservation Capability Maturity Model.