Digital Preservation Framework

Utah State Archives and Records Service

1. Purpose

The purpose of this document is to show that we care about digital records and we have a plan on how to handle them. We also want to be a trustworthy digital repository, as described in ISO 16363:2012.

2. Standards Compliance

All our digital records policies will comply with industry standards, applicable laws, and other department and division policies.

3. Administrative Responsibilities

The Archives' mission and mandate is to

1. Assist Utah government agencies to manage their records
2. Preserve records of enduring value, and
3. Provide quality access to public information.

Each of these responsibilities involves digital records.

3.1 Mandate

The Archives infers from the above mandates that:

- State records are essential to protecting life, property, and rights of citizens.
- State records provide for order and accountability in government.
- Permanent state records document the development and history of government and society.

3.2 Objectives

The Archives' digital preservation program exists to preserve and provide access to permanent Utah digital records.

Program objectives are to:

- Preserve digital records.
- Provide long-term access to digital records.
- Have a standardized way to transfer digital records from agencies.

We will do the following to obtain these objectives:
- Use state funding well
- Obtain sustainable funding for the program
- Work with other entities (government agencies, digital archives) to avoid duplication of effort and resources.
- Comply with standards and best practices of the preservation community.
- Regularly audit the program for effectiveness and compliance with standards.
- Develop preservation methods appropriate for the State Archives.
- Incorporate preservation innovations as appropriate.
- Assess risks such as data loss, degradation, and obsolescence.
- Determine how best to preserve or migrate each digital record.
- Keep metadata appropriate for each record.
- Include both born-digital and digitized records.

4. Organizational Viability

Digital preservation planning occurs at every stage of a record's lifecycle, just like with paper records that are preserved at the Archives.

4.1 Scope

The Utah State Archives will make digital records available, along with their associated metadata.

4.2 Operating Principles

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Utah State Archives operates the digital preservation program under the following principles:

- Access: Long-term access is the primary goal of preservation.

- Authenticity: Digital records will have bit-level integrity and documented provenance to prove authenticity.

- Collaboration: Archives will collaborate with others when appropriate.

- Law Compliance: Archives will comply with applicable laws.

- Standards and Best Practices: Archives will align policies, procedures, and practices with the following standards:
  - 1) *Space data and information transfer systems - Audit and certification of trustworthy digital repositories standard* (ISO 16363:2012).

  - 2) Open Archival Information System (OAIS) reference model.

  - 3) Other community-based standards.

  - Archives will also help develop standards within the digital preservation community.

- Sustainability: The digital preservation program will be cost-effective, transparent, and subject to audit.

- Technology: The Archives will:
  - 1) Seek technology that is scalable, flexible, and reliable.
  - 2) Use various storage methods as appropriate.
  - 3) Make sure all digital records storage is environmentally controlled, quality controlled, and physically and virtually secured.

- Training: Archives will train staff on digital preservation, as it applies to the State Archives and as it applies throughout the digital preservation community.

- Transparency: Archives will create clear policies, procedures, and practices for the program.

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4.3 Roles and Responsibilities

All Archives employees interact with the digital preservation program. The State Archivist implements high-level policy and monitors program progress.

4.4 Selection and Acquisition

Archives works with government agencies to establish retention schedules and manage records. If an agency's records are appraised as historical, the State Archives helps the agency transfer the records to the Archives (once retention is met) for permanent preservation.

4.5 Access and Use

Archives will use the most appropriate technology available to make records accessible. Some records will be maintained in their original format (emulation), while other will be converted to other formats as needed (migration). Preservation plans are determined on a case-by-case basis and may be revised at any time.

4.6 Challenges

The challenges of implementing this digital preservation program include:

- Rapid growth and evolution: Technology and record formats change quickly, and the Archives' digital preservation program needs to be responsive to those changes.

- Sustainability: The Archives' digital preservation program needs to be affordable, and the Archives should not promise more than it can deliver.

- Content provider partnerships: Archives will work with government agencies to prepare their digital records for transfer to the Archives.

- Enabling full preservation: Preservation of digital records requires ongoing effort, partnerships, and financial commitment.

- Flexibility: The Archives will provide access to digital records via whichever platform is most appropriate.

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- Education: Archives will train all staff regarding their contribution to the digital preservation program. The Archives will also provide appropriate training for others regarding digital preservation issues and developments.

5. Financial Sustainability

The Utah State Archives has identified specific resources to back its digital preservation program.

5.1 Institutional Commitment

The Archives will allocate part of its operational budget to the digital preservation program. The Archives also seeks external partnership funding.

5.2 Cooperation and Collaboration

The Archives will collaborate with other institutions to:

- Develop the digital preservation program.
- Share lessons learned about digital preservation.
- Access additional expertise.
- Provide access to digital records across a broad community of users.

6. Technological Support Levels

Records are managed based on the support needed to preserve them, which is determined by a record's uniqueness, risk of loss, feasibility and cost of preservation, and other appraisal criteria.

Staff archivists--in consultation with record and information specialists, system administrators, the State Archivist, and others--determine the support needed.

- **Fundamental Support Level**
  - A moderate level of available resources (e.g. staff, technology, funding) will be considered to ensure long-term preservation of these records. Treatment strategies will be selected from widely-available best practices and may include

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fixity, validation, geographic replication, and others.

- **High Support Level**
  - A high level of available resources (e.g. staff, technology, funding) will be considered to ensure long-term preservation of these records. In addition to treatment strategies listed for fundamental support level treatment, additional strategies employed here may include migration, emulation, normalization, and the development of material-specific solutions.

7. System Security

State Archives verifies the authenticity and integrity of its digital records via checksums and periodic reviews and audits of digital storage. The Archives also has security protocols in place for the physical and virtual safety of its digital records.

8. Procedural Accountability

Utah State Archives creates and maintains policies, procedures, and protocols.

8.1 Audit and Transparency

The Archives re-evaluates its policies and practices every two years. The Archives audits itself every 5 years. The Archives also updates its strategic plan every 5 years.

8.2 Policy Framework Administration

This digital preservation policy framework was completed in the summer of 2015, was approved and endorsed by the Utah State Archives Electronic Records Committee in September 2015, and was approved and endorsed by the Utah State Archivist in October 2015. The Archives will review the framework every two years to ensure that it remains current and comprehensive as the digital preservation program evolves.

8.3 Definitions

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Please see the Utah State Archives *Glossary of Digital Preservation Terms and Concepts* for a current set of definitions of terms used in this digital preservation policy framework.

8.4 References

This digital preservation framework is adapted from the model framework developed and made available online by the University of Minnesota Libraries, and the model framework developed and shared online by Nancy Y. McGovern, an international expert and educator in digital preservation. The McGovern model can be accessed on the ICPSR Data Management and Curation website.

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NDSA Levels of Preservation Analysis

Utah State Archives and Records Service

In 2019 an internal audit of the Utah State Archives digital preservation program was conducted by Digital Bedrock. As part of this audit the Utah State Archives was evaluated according to the NDSA Levels of Preservation Analysis. The results of this analysis have established baselines for where the institution currently ranks, and benchmarks that we are working to achieve through the application of targeted strategic planning. This roadmap for advancing up the NDSA levels of preservation are provided below. This table will be updated at the beginning of each calendar year to demonstrate institutional progress.

Category 01: Storage *Assessed at Level 0.5 by Digital Bedrock in 2019*					
Actions Required for Level 01 (Know Your Content):	1. Have two complete copies in separate locations.	2. Document all storage media where content is stored.	3. Put content into stable storage.		
Actions Required for Level 02 (Protect Your Content):	1. Have three complete copies with one in a separate geographic location.	2. Document storage/storage media and the resources and dependencies needed			

	to function				
Potential Strategies for Archives to Reach Next Level(s):	1. Procure a Digital Preservation System.	2. Develop a secure storage backup plan.	3. Develop a secure third storage backup that is in a separate geographic location.	4. Inventory the collection and document where/how digital assets are stored.	5. Document all storage in a centralized place and document the resources and dependencies required for them to function.
LEGEND:					
Red Cells are items that need to be acted on.					
Yellow cells are items that have been partially acted on.					
Green cells are items that have been acted on.					

# Category 02: Integrity			
Assessed at Level 0.5 by Digital Bedrock in 2019			

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Actions Required for Level 01 (Know Your Content):	1. Verify integrity information if it's been provided with content.	2. Generate integrity information if it is not provided with content.	3. Virus check all content and isolate/quarantine content as needed.
Actions Required for Level 02 (Protect Your Content):	1. Verify integrity information when moving/copying information.	2. Use write-blockers when working with original media.	3. Backup integrity information and store a copy in a separate location from the content.
Potential Strategies for Archives to Reach Next Level(s):	1. Procure a DPS that can perform virus and fixity checks for all ingests.	2. Procure adequate systems (with write-blockers) for appropriate staff.	3. Develop and publish policy governing the fixity and virus checking processes.
LEGEND:			
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Yellow cells are items that have been partially acted on.			
Green cells are items that have been acted on.			

# Category 03:		

Control		
Assessed at Level 0.5 by Digital Bedrock in 2019		
Actions Required for Level 01 (Know Your Content):	1. Determine the human and software agents authorized to read, write, move, and delete content.	
Actions Required for Level 02 (Protect Your Content):	1. Document the human and software agents authorized to read, write, move, and delete content and apply these.	
Potential Strategies for Archives to Reach Next Level(s):	1. Determine people and systems authorized to "touch" data and the processes where this happens.	2. Document in policy the people/systems that are authorized to "touch" data and the situations where they are allowed to do so.
LEGEND:		
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Yellow cells are items that have been partially acted on.		
Green cells are items that have been acted on.		

Category 04: Metadata				
Assessed at Parts of Level 01 and 03 by Digital Bedrock in 2019				
Actions Required for Level 01 (Know Your Content):	1. Create inventory of content, also documenting current storage locations.	2. Backup inventory and store at least one copy separately from content.		
Actions Required for Level 02 (Protect Your Content):	1. Store enough metadata to know what the content is. This includes some combination of administrative, technical, descriptive, preservation, and structural metadata.			
Potential Strategies for Archives to Reach Next Level(s):	1. Inventory the permanent collection and document all digital assets and core defined	2. Inventory and document all storage locations.	3. Backup inventory(s) in dispersed locations.	4. Determine mandatory minimums for all metadata types we require and

	metadata elements for them.			document in policy.
LEGEND:				
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Yellow cells are items that have been partially acted on.				
Green cells are items that have been acted on.				

# Category 05: Content			
Assessed at Level 01 by Digital Bedrock			
Actions Required for Level 01 (Know Your Content):	1. Document file formats and other essential content characteristics, including how/when they were identified.		

Actions Required for Level 02 (Protect Your Content):	1. Verify file formats and other essential content characteristics.	2. Build relationships with content creators to encourage sustainable file choices.	
Potential Strategies for Archives to Reach Next Level(s):	1. Define and document in policy the minimum standards for file formats and the essential characteristics of digital records.	2. Procure a Digital Preservation System that can verify formats and provide reports on formats and file characteristics.	3. Develop policies and guidance for content creators on "best" file formats for preservation.
LEGEND:			
Red Cells are items that need to be acted on.			
Yellow cells are items that have been partially acted on.			
Green cells are items that have been acted on.			

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