

Digital Preservation Policy for the Alkek Library at Texas State University

The following Digital Preservation Policy document constitutes Part 1 of “Action Plan for Developing a Digital Preservation Program,” adopted from the *Digital Preservation Management: Implementing Short-Term Strategies for Long-Term Problems* workshops. The workshops, partially funded by grants from the National Endowment for the Humanities, were initially developed at Cornell University beginning in 2003 under the direction of Anne Kenney and Nancy McGovern, and have been further developed under the direction of Nancy McGovern at ICPSR from 2008 - 2011 and at MIT Libraries since 2012.

The Action Plan consists of three parts, which can be thought of as the three legs of a digital preservation ‘stool.’ The digital preservation program is strong only if all three legs are complete, strong, and maintained. The three parts are **organizational infrastructure**, **technological infrastructure**, and **resources**.

The Digital Preservation Policy outlines the **organizational infrastructure** that supports the digital preservation program. Contents include an overarching **Policy Framework**, more specific **Policies and Procedures**, and **Plans and Strategies** for implementing the policies, as outlined below.

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A. Policy Framework

A.1. Purpose

Texas State University Library (hereafter, Library)—including University Archives and the Wittliff Collections—preserves and maintains readability and accessibility for selected digital materials produced within or acquired by Texas State University. The Wittliff Collections are devoted to collecting and preserving the creative legacy of the Southwest. The University Archives is beginning the process of organizing, preserving, and making available the historical records of the institution. Alkek Library Digital & Web Services Department manages the digitization of select text and image documents from Wittliff and University Archive Collections; and is beginning the process of preserving and providing access to research data and scholarship produced by the University.

This Digital Preservation Policy Framework supports these missions and is the highest-level digital preservation policy document at the Library. It makes explicit the Library’s commitment to preserving the digital assets in its collections through the development and evolution of a comprehensive digital preservation program for both born-analog and born-digital collections.

The policy reflects the goals in the Library’s strategic plans and refers to other relevant Library policies and procedures. The audience for the framework includes Texas State University Library staff, digital content depositors, funders, and users.

A2. Objectives

The Library has been active in developing infrastructure to collect, manage, preserve and keep our digital collections available. This is recognized as ongoing core business for the Library and is critical to its future relevance.

In achieving its digital preservation objectives, the Library recognizes the need to comply with the prevailing standards and practice of the digital preservation community. The Library is committed to developing its digital preservation policies, repository, and strategies in accordance with the ISO standard [Open Archival Information System \(OAIS\) Reference Model \(2012\)](#).

The Library defines the primary objective of digital preservation activities as maintaining the ability to meaningfully access digital collection content over time. To this end, preservation of digital library material includes:

- Bit-level preservation of all digital objects which means keeping the original files intact
- Ensuring that authenticity and provenance is maintained
- Ensuring that appropriate preservation information is maintained
- Understanding and reporting on risks which affect ongoing access
- Performing appropriate actions on sets of digital objects to ensure that the objects continue to be accessible
- Periodic review of preferred formats and digital metadata standards

A3. Mandate

The preservation of digital content at the Library stems from three primary areas of responsibility:

- Preservation of Institutional Scholarship: As an institution of higher education, Texas State University Library is obligated to support scholarship, teaching, and learning
- Contractual and Legal Obligation: To the extent that collected content requires persistent, contractually mandated legally binding access, the Library is mandated to preserve the content.
- Organizational Commitment: The Library's commitment to developing a strategy to gather, preserve, and make available digital content, is explicitly cited in the Library's Strategic Plan for 2012-2017 (Collections & Digital Content Goal)

A4. Scope

Library-held digital resources. The Library has primary responsibility for preservation of:

- Digital resources created by Texas State University and deemed to be of long-term value
- Digital versions of resources reformatted by Library and deemed to be of long-term value

- Unique digital resources which are acquired by Library (through donation or purchase) as parts of archival/manuscript collections and which are unlikely to be preserved anywhere else

A5. Challenges/Incentives

- Budget limitations. Realistically, we will not be able to preserve everything, making our selection criteria for preservation all the more imperative
- Keeping up with technological change in terms of hardware, software, new formats, etc.
- Creating and following submission standards
- Meeting the education needs of staff involved *with* (but not explicitly responsible *for*) digital preservation
- Coordinating workflows across departments within the library, the division, and across campus
- Maintaining a focus on preservation—preservation planning or work can sometimes be seen as something that can be put off, or neglected in favor of immediate access
- Recognizing that new collection areas, such as research data, will continue to develop.

A6. Principles

The Preservation Program will strive to:

- Comply with the Open Archival Information System (OAIS) Reference Model standard and will follow the principles of a Trusted Digital Repository
- Adhere to prevailing standards for preserving digital content whenever possible, including format migration, metadata, interoperability, and life cycle management
- Participate in the development and promulgation of digital preservation community standards, practice, and research-based solutions
- Ensure that the infrastructure components (hardware, software, and storage media components), whether on-site or using a service, of the digital preservation function are in accordance with environmental standards, quality control specifications, and security requirements

A7. Roles and Responsibilities

The Library accepts responsibility for preserving its digital assets. The Library administration evaluates high-level policy documents and reviews programmatic plans and progress presented by the digital preservation group (DPWG). DPWG provides input and guidance to manage the

digital preservation program and the lifecycle of digital objects of enduring value within the Library. The University Archives, the Wittliff Collections, and Digital & Web Services participate in the DPWG and contribute to the Digital Preservation Program.

A8. Cooperation / Collaboration

The Library acknowledges digital preservation as a shared community responsibility, and as such is committed to long-standing and emerging partnerships with similarly committed organizations (e.g. Texas Digital Library) and is committed to collaborating with other institutions, as well as with units within Texas State University, notably Technology Resources, to:

- Advance the development of the digital preservation program
- Share lessons learned with other digital preservation programs
- Extend the breadth of our available expertise

Generally, in working, cooperating and collaborating with others, the Library desires to:

- Understand the goals, objectives, and needs of the communities of creators and the communities of consumers of its digital resources
- Identify appropriate partners and stakeholders to contribute to national and international efforts in digital preservation
- Help develop strategies and initiatives that enable the distribution of collecting, description, service delivery, digitization and preservation activity
- Work actively with creators of digital materials to encourage and promote standards and practices

A9. Selection and Acquisition

The selection of content for digital preservation is governed by the collection development, records retention, and preservation priorities established by University Archives, the Wittliff Collections, and Alkek Library, respectively.

A10. Access / Use

The Library acquires, manages, and preserves digital materials so that they remain accessible over the long term. Certain limitations may be placed on access due to legal or other reasons, but, in general, in so far as possible, the Library strives to make its digital collections accessible to all. Restrictions to use of collections are defined by the collection holder based on donor agreements and copyright status, and may vary from collection to collection.

A11. Definitions

For a preliminary glossary of terms, please consult the following resources.

Appendix 2: Glossary of the Ohio State University Draft Policy Framework:

<https://carmenwiki.osu.edu/display/libraries/Digital+Preservation+Policy+Framework+Task+Force#DigitalPreservationPolicyFrameworkTaskForce-Appendix2:Glossary>

Section 1.7 Definitions of the Open Archival Information System (OAIS) Reference

Model (June 2012): <http://public.ccsds.org/publications/archive/650x0m2.pdf>

A12. References

Digital Preservation Glossary, University of Michigan Library, 14 Mar. 2014.

<http://www.lib.umich.edu/preservation-and-conservation/digital-preservation/digital-preservation-glossary>

Digital Preservation Policy, Library and Archives Canada, 12 Aug. 2008.

<http://web.archive.org/web/20111021140305/http://www.collectionscanada.gc.ca/digital-initiatives/012018-2000.01-e.html#d>

Digital Preservation Policy 4th Edition (2013), National Library of Australia, Feb. 2013.

<http://www.nla.gov.au/policy-and-planning/digital-preservation-policy>

ICPSR Digital Preservation Policy Framework, Inter-university Consortium for Political and Social Research (ICPSR), University of Michigan, Apr. 2007, revised June 2012.

<http://www.icpsr.umich.edu/icpsrweb/content/datamanagement/preservation/policies/dpp-framework.html>

Mosier, Tawnya. Digital Preservation Program: Digital Preservation Policy, J. Willard Marriott Library, University of Utah, Jun. 2010, revised Oct. 2011 by Tawnya Keller and Lisa Chaufty, Apr. 2014 by Tawnya Keller.

<http://www.lib.utah.edu/collections/digital/DigitalPreservationPolicy2012.docx>

Policy for Digital Preservation, Yale University Library Integrated Access Council, Nov. 2005, updated Feb. 2007. <http://www.library.yale.edu/iac/DPC/revpolicy2-19-07.pdf>

Preservation of Digital Resources, Columbia University Libraries, July 2000, revised 2006.

<http://library.columbia.edu/services/preservation/dlpolicy.html>

Schmidt, Lisa M. Digital Preservation Policies Framework for the H-Net Electronic Mailing Lists, Humanities & Social Sciences Online (H-Net), Jun. 2009. <http://www.h-net.org/archive/framework.php>

Shreeves, Sarah L. IDEALS Digital Preservation Policy, Illinois Digital Environment for Access to Learning and Scholarship Illinois Digital Environment for Access to Learning and Scholarship (IDEALS), University of Illinois at Urbana-Champaign, Nov. 2009.

https://www.ideals.illinois.edu/bitstream/handle/2142/2383/IDEALS_PreservationPolicy_Nov2009.pdf

Guidelines for the Preservation of Digital Heritage, National Library of Australia, Mar. 2003.

<http://unesdoc.unesco.org/images/0013/001300/130071e.pdf>

B: Policies and Procedures

B.1. Program Roles and Responsibilities

Oversight Groups

The Digital Preservation Working Group, Digital Projects Oversight Group, Director's Council, University Archivists, and Wittliff Archivists are responsible for collaborating with Collection Managers and producers to determine the long term value of digital collections; assess feasibility of preservation given existing technical support and available resources; and advocate for the necessary administrative commitment to achieve the goals of the digital preservation policy.

Directors Council

Provide adequate managerial, technological, and financial commitment to develop a digital preservation program.

Library System Administrators

Management and oversight of the systems and software of the digital preservation repositories.

University System Administrators

Providing appropriate systems support and technical infrastructure and applications to sustain digital preservation activities.

Collection Managers

Collection managers are designated staff responsible for selection and for ongoing preservation of specific collections. For example, the University Archivists and the Wittliff Collections Archivists are Collection Managers.

It is the responsibility of the collection manager to guide producers in content submission and selection, undertake preservation actions, monitor risks, and perform regular audits and assessment activities.

Producers

Producers create and collect digital content for preservation in accordance to submission guidelines.

Consumers

Any individual or service that uses the Libraries' services to discover and access preserved digital information.

Collaborators

Third-party institutions or individuals that support the Libraries' digital preservation efforts, financially or technologically.

Sources:

https://library.osu.edu/documents/SDIWG/Digital_Preservation_Policy_Framework.pdf
<http://www.libs.uga.edu/staff/digitalprespolicy2015july.pdf>

B. 2. Digital Assets

B. 2. a. Quality Creation and Benchmarking

Description: includes recommendations and requirements for quality digital object creation, quality control, and benchmarking as appropriate for producers and formats that will be deposited. See Action Plan, Part 2 – Ingest.

Digital collections must adhere to the minimum requirements given below. Depending on the specific objectives of the projects, higher minimum quality (codec, bit rate, resolution, etc.) may be desirable for some materials. Please note that this document is not intended to address all technical issues and does not describe the details of operational procedures. See project-specific guidelines for further information.

Minimum Benchmarks for Image Masters

Document Type	Bit Depth	Resolution	File Format
Printed Text	1-bit bitonal	600 ppi (The images may be interpolated from 400 optical dpi 8-bit images)	TIFF (uncompressed or lossless compression)
Book Illustrations	8-bit gray or 24-bit color	400 ppi	TIFF (uncompressed)
Manuscripts	8-bit gray or 24-bit color	400 ppi	TIFF (uncompressed)
Photographic Prints	8-bit gray or 24-bit color	600 ppi	TIFF (uncompressed)
Works of Art on Paper	24-bit color	400 ppi	TIFF (uncompressed)

Maps & Oversized Items Above 17x24 (A2)	8-bit gray or 24-bit color	300 ppi	TIFF (uncompressed)
B&W Negatives & Slides	8-bit gray	5000 pixels across the longest side	TIFF (uncompressed)
Color Negatives & Slides	24-bit color	5000 pixels across the longest side	TIFF (uncompressed)
Media / Format	Bit Depth	Sampling Rate	File Format
Audio	24 bit	96 or 48 khz	Wav (uncompressed)
Video	8 or 10 bit, uncompressed	Color sub-sampling 4:2:2 or 4:1:1	AVI (no interframe compression)

Quality control (QC) is an integral component of creating digital content that will retain value and utility over time. QC encompasses procedures and techniques to verify the quality, accuracy, and consistency of digital projects.

QC Recommendations:

1. Scope of Inspection: Inspect the quality of the digital files, the accuracy and consistency of metadata, and the integrity of the storage media for delivery to the central depository.
2. Extent of Inspection: Establish a sampling frequency for each aspect of the QC program. Recommended frequency is 100% of all files and accompanying metadata; minimal requirement is 10% sampling of each file/metadata batch.

3. Type of Inspection:

a. Visual Quality

The key factors in image quality assessment are resolution, color and tone, and overall appearance. Image quality will be judged through the use of technical targets (resolution, tone, and color) in conjunction with imaging software. QC can be conducted by visual inspection of images/video, although it is important to note that quality assessment, especially for tone and color may be highly subjective and changeable according to the viewing environment and the characteristics of monitors and printers.

b. Audio Quality

Audio quality will be assessed by listening to the beginning, middle, and end of the digital files, verifying anomalies recorded in captured notes and metadata assigned by audio technician; and by viewing the waveform when necessary. QC can be conducted by the person who did the transfer or by a colleague.

c. Metadata

Metadata has a central role in processing, managing, accessing, and preserving digital collections. Because of the crucial role it plays in the life cycle of digital collections, metadata review should be an integral part of a quality control program. QC should verify the following: data integrity, form and validity, accuracy of derived data, correctness of data, accuracy and completeness of components, and dynamic metadata.

Sources:

https://www.library.cornell.edu/preservation/IMLS/image_deposit_guidelines.pdf

<http://www.library.unt.edu/digital-projects-unit/standards>

<http://www.digitizationguidelines.gov/guidelines/>

B. 2. b. Selection and Acquisition Policies and Procedures

See **Section A.9. Selection and Acquisition**, and the selection and acquisition policies of the Wittliff Collections and University Archives.

B.2.c. Transfer Requirements and Deposit Guidelines

As much as possible, transfer and deposit of materials into the preservation repository should include

- Data file(s)
- Documentation or metadata, including
- Description of the materials and their creation.

Digitization:

For materials digitized in house or using a vendor

- At the time of digitization, make decisions regarding file formats and filenaming conventions.
- At the time of digitization, if possible, make decisions regarding descriptive metadata, embedded metadata, and technical/preservation metadata.
- Deposit files, descriptive metadata, and technical/preservation metadata into system as a SIP.

- Transfer can be done via server (in house) or hard drive (vendor). Best practice is to get a checksum as part of the preservation metadata from the digitizer and compare to the file after transfer, using a program such as BagIt.

Accessioning born digital or digital files deposited by donors:

- As much as possible, work with donor ahead of time
- Upon accessioning, perform bit-level preservation by depositing the original file in the repository. Create a SIP by adding any documentation (such as emails) or any other documentation of the donation and the materials. Include basic descriptive (title, creator, date if known, date of accession, accession number, description); and preservation metadata (checksum, file types, file sizes). Tools such as BagIt and or a metadata extractor may be used to create preservation metadata.
- When processing, follow guidelines to determine preservation needs / whether the item can or will be given full preservation treatment.
- If full preservation, create a new SIP with full description and preservation metadata.

Legacy digital files on obsolete formats:

- Work with curator and lead archivist to determine if materials should receive preservation treatment.
- Create ingest/accessioning SIP by using BagIt or another tool to safely create a checksum and copy to the server.
- Create processing SIP by using Archivematica and other tools to arrange and describe materials, adding descriptive and preservation metadata.

B.2.d. Access and Use Policies

Texas State University Library acquires, manages, and preserves digital resources so that they remain accessible to their designated communities over the long term. Certain limitations may be placed on access due to legal, donor, and/or other reasons. In so far as possible, the Library endeavors to make its digital resources accessible to all users. Restrictions on use of collections are defined by the Collection Manager and vary from collection to collection.

B.3 Digital Preservation Strategies

The Library commits to maintaining the fixity (bitstream integrity) for all digital objects in the preservation repository. Digital objects are assigned a unique identifier to provide persistent access over time. Secure storage and backup services are provided for all digital content. The Library will take reasonable steps to ensure the usability of the digital objects. Preservation steps

include format migration, emulation, and normalization (actions that convert an unsupported format to a supported format).

The preservation steps performed by the Library are determined by the file format of the digital objects, and/or priorities as determined by the Collection Manager. More extensive action will be taken to preserve the usability of objects in file formats that are open, fully disclosed, well documented, widely adopted, and most accessible for migration, emulation, or normalization actions. Fewer actions will be taken to preserve usability of file formats that are proprietary and/or undocumented, and those that are considered working formats.

B. 4. Technological Infrastructure

B. 4. a. Digital Archive Operations

General Requirements

Operations reflect the frameworks and concepts of the Open Archival Information System (OAIS) model.

The digital preservation program will use a Digital Preservation System (DPS) for processing digital materials and preparing them for long-term storage.

Pre-Ingest

The Collection Manager or Producer insures objects are created according to recommendations and requirements for quality digital object creation.

The Collection Manager or Producer coordinates the collection and creation of metadata.

Ingest

The Collection Manager or Producer loads the files and metadata into The Digital Preservation System (DPS). The DPS will create a Submission Information Package (SIP) and transfer it to a staging area.

The DPS will transform a SIP into an Archival Information Package (AIP) that conforms to the archive's data formatting and documentation standards. The DPS will create a checksum for each AIP.

Archival Storage

The DPS will add the AIP to the permanent storage facility. The permanent storage facility is a storage array managed by Technology Resources Core Systems Unit. It consists of two

datacenters located in different parts of the campus, with data replicated in both locations. Storage system software creates and monitors its own checksums and replaces damaged files from copies. Technology Resources is responsible for maintaining regular backups and restoring lost or damaged files.

Data Management

The DPS maintains a database of descriptive metadata identifying and describing the archive's holdings.

Administration

Library System Administrators monitor the functionality of the entire archive system and control changes to the configuration. Library System Administrators restrict or allow access to elements of the archive, as determined by archive policies. The Collection Manager or Producer is responsible for updating or replacing the contents of AIPs.

B. 4. b. Platform Requirements and Procedures

Platform requirements and procedures most likely will change as improved technology becomes available.

As of June 2016, platform solutions are being explored.

All digital preservation materials are stored on the Data Center at files.txstate.edu, following current Texas State University redundancy and security policies.

An appropriate platform would be one that is based on OAIS, includes fixity checks, maintains copies in disparate locations, and complies with established security protocols.

C. Plans and Strategies

C.1. Implementing the Framework

2016-2019 Continue with Action Plans

Action Plan Part 2-complete by May 2018

Action Plan Part 3-target by May 2019

2017-2018 Pilot test Archivematica and investigate other tools, such as Preservica and LibSafe, to determine the best fit for the Library digital preservation program. *Archivematica testing is put on hold until Red Hat version is released.

C.2. Publicizing and Promulgating the Policy and Plan

Digital Preservation System (Open Archival Information System)

Audience: Librarians, Library Staff, University Administration

The Digital Preservation Working Group was initiated in summer 2015 with the goal of developing a standards-based digital preservation system for the University Library. Its main goal is to establish a fully functioning, administratively supported, and sustainable Open Archival Information System (OAIS) for managing, preserving, and providing ongoing access to the University Library's digital assets within a timeframe of five years.

As technology changes at an ever-increasing rate, and as we increase the numbers and kinds of digital assets we acquire and create, it is becoming clear that maintaining access to our digital content will require careful attention to several factors: file formats, hardware requirements, software changes, etc. Because technology changes, we need to make sure our files will remain accessible and useable as hardware and software systems change and evolve.

A digital preservation system is designed to keep files and assets alive and viable for as long as necessary or desirable. Such a system will have people-centric and technology-centric components. People will keep watch over the technology and will implement policies to determine selection criteria for what will be included in our system and for how long, while technology components of the system will include hardware and software to hold the files and manipulate and manage them.

Several key standards already exist that support digital preservation. Chief among them is the ISO standard Open Archival Information System (OAIS), which contains a reference model for building such a system. In the coming years we'll be relying on this document as we design and implement the Library's preservation system. We will also continue to work our way through the "Action Plan for Developing a Digital Preservation Program" created by Cornell University and ICPSR, and maintained by MIT. These documents will lead us to develop plans, policies, and software and hardware systems to implement our system.

<http://web.archive.org/web/20060908221534/http://commondepository.library.cornell.edu/docs/elevatorpitch-v2.pdf>