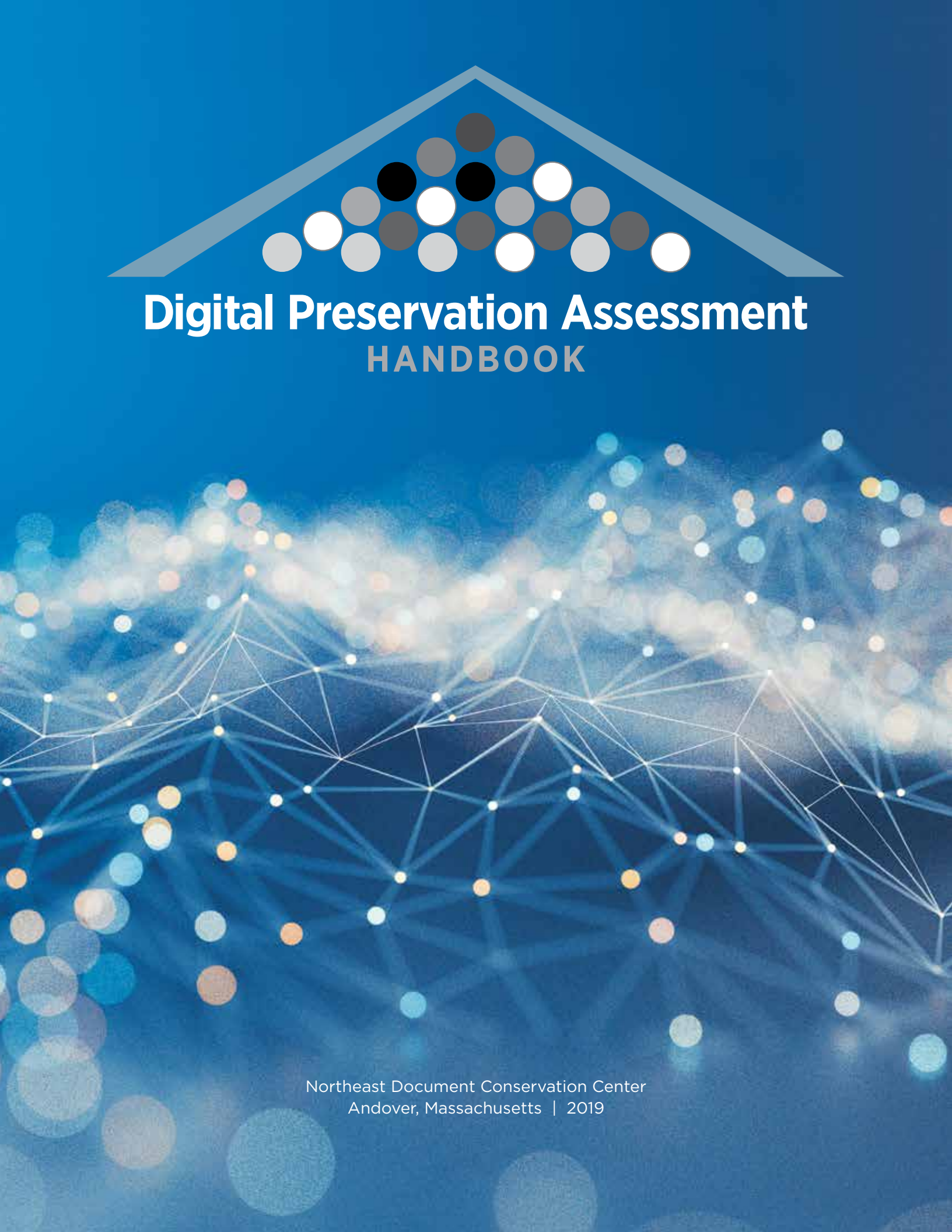

Digital Preservation Assessment
HANDBOOK

Northeast Document Conservation Center
Andover, Massachusetts | 2019

CONTENTS

2 **Acknowledgements**

3 **Grant Overview**

4 **Introduction**
Digital Preservation Assessment Handbook
Assessment Process

5 **Section 1: Assessment Framework**
The Organization
Staff & Resources
Policy Infrastructure
Processes & Workflows
Technological Resources

23 **Section 2: Templates**
Assessment One-Pager
Pre-Visit Questionnaire
Assessment Report

47 **Section 3: Glossary**

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The assessment framework included in this Handbook was piloted at eighteen institutions across the United States. We are grateful to those institutions and to the cultural heritage professionals who attended the Digital Preservation Assessment Training Institute in order to serve as their assessors. All parties provided feedback on their experiences that improved the deliverables of this grant project. An overview of the grant is included in this publication, and additional documentation is available at www.nedcc.org.

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GRANT OVERVIEW

In December 2016, NEDCC received a National Endowment for the Humanities Preservation and Access Education and Training grant to prepare and present a collaborative Digital Preservation Assessment training program. This program approached digital preservation assessment and training through case-study assessments, shadowing opportunities, workshops, a training institute, and a final symposium. The grant period ran from January 2017 through December 2018. Frances Harrell, Senior Preservation Specialist at NEDCC, was the project manager.

During 2017, NEDCC worked with other Regional Alliance for Preservation (RAP) centers along with digital preservation practitioners and educators to develop a framework for identifying and assessing core elements of digital preservation practice. The framework was piloted at four institutions, including an athenaeum, a municipal office, a museum, and a university library. These institutions were located in Colorado, Illinois, New York, and North Carolina. Thereafter, staff from three RAP centers met to revise the framework and begin developing related resources in preparation for the second round of assessments.

The framework was vetted in a second round of assessments during the first half of 2018, and at the same time, workshops were offered on the Digital Preservation Peer Assessment model. Participating institutions included an indigenous culture organization, a museum library, a public library, and a state historical society. These institutions were located in Alaska, Massachusetts, Nebraska, and Pennsylvania. In July 2018 the Digital Preservation Assessment Training Institute trained a group of twelve assessors who then performed ten assessments as part of the program. The cohort of trainees consisted of Digital Preservation managers, graduate school faculty, statewide preservation officers, and consultants from nine different states. Their assessment sites included public libraries, small museums, academic institutions, and community archives in Colorado, New York, Oklahoma, Pennsylvania, Vermont, and Wisconsin.

Building the Community: A Digital Preservation Symposium concluded the grant in November 2018. Fifty people from a range of organizations gathered for a day of discussion about the state of digital preservation practice and the National Digital Stewardship Agenda. With a focus on digital preservation program assessment, the day included case studies, research, lightning talks, a keynote address, facilitated participation among attendees, and a panel of digital preservation assessment consultants.

Following the conclusion of the grant, the *Digital Preservation Assessment Handbook* (including the assessment framework, glossary, questionnaire, and report template) and the *Digital Preservation Peer Assessment* framework were made freely available online under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International license.

INTRODUCTION

Digital Preservation Assessment Handbook

This handbook is comprised of a **framework**, which provides a structure for all components of a digital preservation assessment; a set of **templates** that are used to conduct an assessment, and a **glossary** of terms.

These tools are intended for use by cultural heritage consultants and professionals who provide preservation assessment services. The NEDCC publication *Digital Preservation Peer Assessment* will be of interest to readers who have a more limited knowledge of digital preservation and/or who wish to complete a digital preservation assessment with a partner institution for mutual support and accountability.

In this framework, **digital preservation** refers to "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."[1] While digitization (converting analog materials to a digital format) is related to digital preservation and is addressed in this framework, the focus of the assessment is on digital preservation (long-term access to digitized or born-digital content).

Assessment Process

The goal of a digital preservation assessment is to help an institution document digital preservation successes, recognize areas that need further growth, and identify challenges that stand in the way of that growth. It can also help an institution prioritize next steps for improved long-term access to digital collections with a digital preservation plan.

A digital preservation assessment typically consists of a trained assessor visiting an institution, meeting with staff, gathering information, and following up with a report documenting digital preservation efforts and making recommendations for improvement. In advance of the site visit, the institution completes a pre-visit questionnaire.

The site visit typically requires one day of on-site time at an institution, though that may vary depending on the size of the staff and the number of people involved in digital preservation. The structure of the site visit is flexible and is based on the assessor and the needs of the institution. It can include a presentation to the board or administration which, by summarizing initial findings and describing the assessment process, is a useful way to begin advocating for digital preservation within an organization.

When a site visit is not possible, the assessment can be conducted remotely via video conference. Scheduling online meetings on sequential days is an effective strategy for ensuring that all stakeholders have an opportunity to participate in the assessment.

After the visit (in-person or virtual), the assessor may make follow-up phone calls to gather additional information for the assessment report that was not available during the site visit or from the pre-visit questionnaire. It is helpful for the institution to review a draft of the report before it is finalized in order to correct factual errors, if any. The assessor should also follow up after the completed report is delivered, as this will help maintain the institution's momentum toward beginning to implement the report's recommendations.

1 Definitions of Digital Preservation, Association for Library Collections and Technical Services, http://www.ala.org/alcts/resources/preserv/defdigpres0408.

SECTION 1:

Assessment Framework

SECTION 1: INTRODUCTION

This digital preservation assessment framework is intended to guide digital preservation assessors in conducting an on-site or virtual assessment and in writing a digital preservation assessment report. The framework is divided into sections that parallel the sections in the pre-visit questionnaire and in the report template. (See Section 2: Templates for these tools.)

The assessor, working in coordination with the primary contact at the institution, must identify staff members who can answer the questions outlined in this framework and in the pre-visit questionnaire. Prior to the site visit, the assessor should review the completed questionnaire and determine which sections require discussion or follow-up during the assessment visit.

Each section of the framework contains questions for the assessor to use to guide their observations during the site visit. These questions are followed by example recommendations, which are listed in no particular order (i.e. they are not meant to be completed sequentially nor do they represent increasing levels of program sophistication). This framework was written with an awareness that there is a spectrum of maturity levels for digital preservation programs, and institutions may fall anywhere on that spectrum. The recommendation examples are intended to prompt the assessor and to serve as suggestions that can be incorporated into a report. The assessor's actual recommendations will depend on the institution's existing capabilities and long-term goals.

THE ORGANIZATION

Consider the following topics—Collections, Organizational Structure, Mission, Designated Community, and Organizational Strengths—when writing the **Introduction** and **Section I: The Organization** in the assessment report.

The assessment is intended to cover an institution's unique digital collections that are meant to be preserved for long-term access. This does not include emails, documents, or other materials produced by the institution in the context of normal operations in current business use, although some of these digital materials may pass into permanent collections through records management if the institution is the repository of its own history. Digital collections may include digitized photographs, born digital documents donated by a writer, oral histories, or other digital materials that are intended for long-term access as a part of an institution's collections.

Collections

Considerations

- What digital collections are held by the institution? Derive answers from the pre-visit questionnaire, from discussions throughout the site visit, and from research done beforehand.
- Which collections are the most valuable? Which are *seen* as most valuable? Are there any implicit or explicit priorities?
- What potential collections are not being acquired and why?
- What file formats are contained in the digital collections? Which formats are most prevalent?
- Are there misunderstandings about digital collections and digital preservation, e.g. confusion between digital preservation and records management or conflating an email archive with digital collections?

Recommendation bank

There is no recommendation bank for this section. Use the prompt questions to define for the institution which digital objects will be included in the scope of the assessment.

Organizational Structure

Digital preservation efforts need support through every level of an organization. Most importantly, they need a decision-making body with the proper authority and expertise to plan and execute a multidisciplinary digital preservation program. Understanding the overall context of an institution and its relationships with a larger institution, corporation, or other organization is helpful in determining audiences for digital preservation advocacy. Staffing is further explored in the Staff and Resources section of this framework.

Considerations

- Is there a Board of Directors or similar governing body? Is the organization a part of a larger institution? How do these groups influence planning and implementation of digital preservation?
- Which parts of the organization have responsibility and/or authority for planning for digital collections and digital preservation? (More specific information is included in the Staff and Resources section, below.)
- What is the reporting structure for the units involved in digital preservation or broader collections care?
- Who has authority to make policy decisions? Who develops procedures? (More specific information is included in the Policy Infrastructure section, below.)
- Is there collaboration between the units and functions needed for digital preservation?

- Which stakeholders are involved in long-term planning for digital preservation? Are there stakeholders who should be involved but are not?

Recommendation bank

- Create a cross-functional decision-making structure (e.g. a formal or informal interdepartmental group) that can continue internal assessment and develop digital preservation plans and priorities. The consultant may suggest specific structures for effective decision-making that seem evident to them.
- Clarify each staff member's role in managing digital collections.
- Change reporting structures to more accurately reflect digital preservation workflows and goals. The consultant may suggest specific structures that seem evident to them.
- Add non-staff stakeholders to decision-making processes and groups.

Mission

An effective and sustainable digital preservation program should be informed by and referenced in the institution's mission statement. Tying digital preservation to the mission of the organization helps prioritize and sustain activities and decisions over the long term. A vision statement specific to digital collections is also helpful.

Considerations

- What is the organization's mission?
- Does the mission statement include the concept of preservation of collections?
- How does digital preservation support the mission?
- How does digital content support the mission?

Recommendation bank

- Create a mission statement for the organization and write it down.
- Include preservation of collections in the mission statement, and include the preservation of digital materials implicitly or explicitly.
- Document how digital preservation goals and activities are aligned with the mission statement.
- Ensure the mission statement is familiar to staff and underpins daily activities.
- Ensure and document how activities, services, and collections are mission-based.
- Develop and document a five-year, long-term vision for digital collections and ensure that it is communicated across the organization. This vision may be included in the mission statement or strategic plan, or it may be a separate statement.
- Commit to the preservation of and long-term access to digital collections.

Designated Community

The concept of the designated community was developed and refined in the Open Archival Information System (OAIS) reference model, a widely recognized standard for the functional structure of an archive. A designated community is an archive's target users, and a designated community statement describes those users by their knowledge, interest, location, demographics, or other characteristics. The designated community statement guides decisions around collection management, selection, and access. Knowing whom an institution serves is as important as knowing what objects and programs it manages for its users.

Considerations

- Who uses the digital collections?
- How are the digital collections used?
- Is there a community that the institution especially wants to reach? Describe existing outreach activities.
- How does the institution tailor its services to a specific community?
- Are user statistics collected? Who analyzes them, and how are results shared?
- How does the institution define its designated community? If this hasn't yet been defined, then who uses the physical collections?

Recommendation bank

- Document user groups in a designated community statement.
- Collect and analyze user statistics to understand the designated community.
- Identify a process or activities for community engagement.
- Evaluate community engagement processes.
- Ensure a member of the designated community is on the cross-functional team that informs decisions about digital preservation activities.
- Map services to designated audiences.

Organizational Strengths

As important as gap analysis is for digital preservation planning, identifying and fostering strengths and successes is key to growing a program, staying engaged, and finding satisfaction in meeting the organization's mission.

Considerations

- What are people (staff, users, the Board, etc.) excited about? Proud of?
- What skills does the institution have in-house?
- What are some strengths outside of digital collections and preservation?
- Is there a success that can be built upon?
- Is there a collaboration or alliance that can be built upon? (See also Community of Practice, below.)
- How might the organization leverage its strengths to promote innovation and preservation?

Recommendation bank

There is no recommendation bank for this section. Use the prompt questions to identify and document strengths and successes that can be built upon to improve the digital preservation program.

STAFF & RESOURCES

Consider the following topics—Staffing and Roles, Staff Training, Budgeting and Resources, and Community of Practice—when writing **Section II: Staff and Resources** in the assessment report.

Staffing and Roles

Planning for a sustainable digital preservation program requires identifying staff who will perform digital preservation activities. Digital preservation activities are often the responsibility of many different individuals across an organization, such as collections managers, archivists, IT staff, administration, and other stakeholders. It is important to include digital preservation activities in the job descriptions of staff. This legitimizes the time that staff spend on digital preservation and also contributes to the continuity of roles during staff turnover.

Considerations

- Who has responsibilities related to digital preservation? Include both in-house and outsourced activities. What is the reporting structure?
- How much staff time is dedicated to digital preservation? Do staff have protected time to work on digital preservation?
- How is digital preservation written into job descriptions? How frequently are job descriptions assessed to determine whether they still accurately capture necessary duties?
- Who is empowered to make staffing decisions for the program?
- What would be the ideal staffing for digital preservation at this institution? What plans does the institution have for moving toward ideal staffing? What challenges are in the way of achieving these staffing goals?
- What technology skills (programming, photography, other) do staff have that can contribute to digital preservation efforts? Does anyone on staff have training or experience in digital preservation that is not being used?

Recommendation bank

- For an institution in which personnel have minimal time allocated to focus on digital preservation:
  - Identify basic digital preservation responsibilities and assign to staff.
- For an institution in which some personnel have time and skills that can be directed towards the institution's digital preservation goals:
  - Identify additional digital preservation responsibilities and assign to staff.
  - Plan for or create a permanent role for a digital preservation manager or project lead.
- Document which staff members have some responsibility related to digital preservation, especially if they are not in the same department.
- Add digital preservation responsibilities to staff positions and job descriptions.
- Increase staff time allocated to digital preservation activities, and include protected time for reading and research.
- Evaluate over time whether the current staff hours and expertise allow the institution to meet digital preservation needs and goals.
- Re-orient job descriptions and positions to reflect digital preservation enthusiasm, training, and experience.

Staff Training

Digital preservation is an ever-evolving and relatively new area of expertise for cultural heritage institutions. Even with increasingly standardized approaches to digital preservation challenges, the field continues to develop. Staff must keep their knowledge of strategies and tools up-to-date and maintain strong relationships with colleagues who are addressing similar challenges. Conferences and continuing education courses can be helpful for benchmarking programmatic progress, learning about emerging trends, and maintaining relationships with professionals at other institutions. Attending focused, tool-based workshops, user group meetings, or conferences focused specifically on digital preservation will be helpful in building and maintaining digital preservation knowledge. Finding time to set aside for learning new skills can be challenging, but it is necessary in order to move forward and sustain a digital preservation program.

Considerations

- What training have staff had in digital preservation?
- What training have staff had in project management?
- How frequently are skills assessed to determine whether they fit job requirements and/or newly-assigned tasks?
- What digital preservation skills need to be developed? Provide a list of training and professional development opportunities.
- How does the institution support staff training and professional development (e.g. funding, time)?
- How are staff members chosen for training opportunities?
- Are there opportunities for cross training within the institution?

Recommendation bank

- Ensure that staff have access to basic digital preservation information and resources.
- Encourage staff to access professional networks for asking questions, verifying information, and vetting ideas.
- Provide internal support for professional development through funding and/or dedicated time, and frame this support as a strategic goal of the organization.
- Support staff in actively pursuing online or in-person training, professional development, or independent reading and research.
- Require that staff complete and maintain a level of digital preservation competency through ongoing professional development.
- Engage an on-site trainer for coordinated, team-based professional development.
- Use the strategic goals of the institution to guide professional development.

Budgeting and Resources

Storage, access, and other ongoing digital preservation activities require planning and support through a consistently allocated budget. Budgetary support is needed for software, hardware, and services that support the ongoing maintenance of a digital preservation program. Because digital preservation costs are typically recurring expenditures, it is less sustainable to support digital preservation activities with grant funding.

Considerations

- How are digital preservation activities funded, including staffing, hardware, software, outsourced reformatting, training, tech support, network maintenance, subscription services, and any expenses for digital infrastructure?
- What are the program's funding sources (e.g. internal, grants, donations, other)?
- What is the organization's ongoing commitment to a budget for digital preservation? What is the process for creating the annual budget that includes digital preservation?
- What are the primary budget challenges for digital preservation?

Recommendation bank

- Analyze current spending and then use the analysis to create an annual budget for digital preservation from operating funds. Depending on the institution, this allocation may be any of the following:
  - No budget line item designated for digital preservation activities, but a list of priority goals is prepared for unexpected funding opportunities.

  - No budget line item designated for digital preservation activities, but some digital preservation activities are funded through operating funds.
  - A fluctuating budget line for digital preservation activities that allows the institution to achieve its priority goals.
  - A sustained annual line item specifically dedicated to digital preservation activities and approved at the administrative level.
  - A multi-year budget plan that includes expected capital expenses for digital infrastructure.
- Identify appropriate grants for priority projects.

Community of Practice

Digital preservation is a collaborative field. Programs are stronger and more sustainable when they are connected internally across departments and externally to other institutions. Consortium models are common in digital preservation implementation, as collaborative projects can help organizations preserve digital materials in a greater quantity and at a lower cost than when working alone. Identifying and fostering internal partnerships and external networks help digital preservation programs thrive through broader advocacy, increased capacity, and shared knowledge.

Considerations

- Who at the organization monitors the fields of digital preservation and digital collection management for changes in best practice?
- Who are actual or potential collaborators *within* the organization? Describe the areas of collaboration.
- Who are actual or potential collaborators *outside* the organization? For example, are there institutions of similar size/resources in the area that could collaborate on training, services, etc.? Describe the areas of collaboration.
- Are staff connected to other professionals through listservs, professional development activities, and/or professional associations?

Recommendation bank

- Monitor the fields of digital preservation and digital collection management for changes in best practice. Share this information with stakeholders in the organization.
- Connect to other professionals through listservs, workshops, conferences, and/or membership in professional associations or consortia.
- Identify potential collaborators both within and outside the organization. Consider regional organizations and consortia.
- Hold regular meetings with collaborators.
- Identify and implement workflows and tools to help with collaboration.

POLICY INFRASTRUCTURE

Consider the following topics—Collection Development, Selection for Digitization, Strategic Planning for Digital Preservation, and Preservation Plans—when writing **Section III: Policy Infrastructure** in the assessment report.

Collection Development

A collection development policy specifies what subjects, formats, or other areas of focus an institution primarily collects. The policy provides consistency across an organization, documents decisions and procedures for ongoing activities, and serves as an important reference for future stakeholders. Basing a collecting focus on the mission and community needs of the organization will ensure that the collections remain a priority for investment into the future.

Considerations

- Is there an active collection development policy for digital collections? Is the policy documented, communicated across the organization, and followed?
- Who has responsibility for creating/updating the digital collection development policy?
- Who makes digital collection development decisions?
- Does the institution have a mandate or obligation to collect and/or preserve specific digital materials?
- What is in the digital collections now? What is explicitly not collected (e.g. formats, content)?
- What would the institution like to have in its digital collections in the future?

Recommendation bank

- Depending on the institution, any or all of the following may apply:
  - Understand and document the collecting unit's preservation mandates and commitments.
  - Develop a plan for meeting mandates and obligations.
  - Create and/or maintain a collection development policy that includes digital collections.
  - Create and/or maintain a collection development policy specific to digital collections. Include reformatted items, born-digital acquisitions, internal records creation, etc., as well as digital collection strengths and goals.
- Begin active collecting following documented policies.
- Discontinue collecting and/or preservation of objects that do not align with policies or goals.

Selection for Digitization

Because digital preservation requires planning and investment over time, it is important to be selective about the digital objects that are brought into collections, especially collections that are designated for long-term preservation. Individual scans created at a reference desk may not be worth maintaining in a preservation environment, but digital recordings of events may be the primary documentation of those events and deserve permanent preservation. While collection development policies describe the content areas and broader goals for the collection, selection policies determine the specifics of what and how physical collections are reformatted and which digital objects are acquired.

Considerations

- How is the digitization selection policy documented? Is the selection policy communicated across the organization and followed?
- Does the selection policy uphold the mission of the organization?
- How are collections/items chosen and prioritized for digitization?
- What types of digital objects is the organization creating through digitization?
- Which objects require long-term preservation and why?
- Does the institution define desired technical targets for the materials it collects, such as preferred format?
- Does the institution provide guidance on how to create digital objects that will be transferred into its digital repository?

Recommendation bank

- Develop a basic selection document describing how objects are selected for digitization.
- Develop a basic selection document describing which born-digital objects are currently accepted and how.
- Create and/or maintain a detailed, written, and updated selection policy for digitization. Include creators and users in the selection policy development process.
- Expand selection criteria to include technical targets for digitization and technical guidelines for born-digital creation.
- Create a review process and schedule for the selection policy.

Strategic Planning for Digital Preservation

Digital preservation activities should be guided by a planning process, and this planning process should be tied to an organization's mission and strategic initiatives. This embeds digital preservation as an important activity within the mission of the organization and avoids characterizing it as an optional activity that can be eliminated if resources are not readily available.

Considerations

- Does the organization's broader strategic plan incorporate preservation of digital collections?
- Does the sub-unit's strategic plan or mission statement include digital preservation, implicitly or explicitly? Is there a process for drafting or updating the strategic plan? Who is involved in the planning?
- Is there representation on the planning team from all stakeholder groups?
- How does the strategic plan support the day-to-day work of the collections team?

Recommendation bank

- Share examples of strategic planning processes and/or encourage the institution to research the strategic planning processes of their peers.
- Add a digital preservation program to the institutional strategic plan.
- Develop a specific strategic plan for the digital preservation program or collections.
- Include preservation of collections in the mission statement, and include the preservation of digital materials implicitly or explicitly.
- Identify or apply for funding to support a facilitated planning process.
- Develop and document a five-year, long-term vision for digital collections and ensure that it is communicated across the organization. This vision may be included in the mission statement or strategic plan, or it may be a separate statement.

Preservation Plans

Just as understanding the vulnerabilities of physical formats leads to planning specific preservation actions for analog collections, an understanding of the vulnerabilities of digital collections leads to planning specific preservation actions for digital materials that go beyond a one-size-fits-all data backup. Redundant copying, storage architectures, and metadata are just some of the strategies used to preserve different types of digital objects according to their specific needs. Born-digital objects and video content may require different long-term approaches than other, simpler materials. Normalization and migration are practices that might be appropriate for certain digital objects.

Considerations

- Is there a documented preservation plan for either physical or digital collections?
- Is the digital preservation policy aligned with legal requirements, records retention schedules, or other obligations?
- Is there a collections committee or other body that provides preservation guidance for all collections/infrastructure?
- Describe current preservation activities; e.g. assessments, workflows, grants, etc.
- Are there policies and procedures for deaccessioning digital collections?
- What are the different types of digital items that exist in the collections? Consider characteristics such as format, content, generation of software, reformatted, and born-digital.
  - Are any of these materials not included in digital preservation activities?
  - What is the current preservation practice for each type of item? Consider procedures and workflows (including ad hoc ones) that describe how items are brought into custody, placed on storage media, managed while they are in storage, processed and described, delivered to users, etc.
  - What items are most at risk for loss with the current procedures?
- What file formats are maintained in their original format, and what file formats are migrated for preservation?
- What potential collections items are not accounted for in current preservation practices?

Recommendation bank

- Develop a basic statement of what is included in digital preservation activities.
- Develop a pilot preservation plan for a type (or several types) of items through its entire lifecycle.
- Create and/or maintain a detailed, written, and updated statement on digital preservation, and implement it.
- Expand preservation planning to include potential future collections.
- Determine a process and schedule for reviewing preservation plans.

PROCESSES & WORKFLOWS

Consider the following topics—Reformatting, Born-digital Objects, Metadata, and Documentation—when writing **Section IV: Processes and Workflows** in the assessment report. Reformatting and Born-digital Objects will both contribute to the "Content Creation" subsection of Section IV.

Reformatting

Digitization standards, best practices, and workflows affect long-term access to digital collections. An institution can facilitate future access and preservation by following best practices for archival capture of analog materials. For example, using widely adopted, open-source file formats for preservation master files reduces the risk that the file format will be unreadable by software in the future. Digitizing collections at a high resolution creates a file that will be appropriate for a range of uses, from research to publication or exhibition. Steps towards digital preservation, such as embedding metadata into image files, can be incorporated into a digitization workflow to better prepare collections for long-term preservation.

Considerations

- Are analog collections being reformatted into digital formats? How? Why? By whom?
- Is the Selection for Digitization policy being used to identify collections/items to reformat? (See also the Policy Infrastructure section, above.)
- Is the reformatting approach congruent with the organization's mission and goals?
- Who has responsibility for documenting reformatting procedures?
- Do procedures include guidelines for handling physical collections during reformatting?
- Are reformatting workflows systematic, programmatic, and consistent?
- How are reformatting workflows communicated, disseminated, and evaluated?
- Do Quality Assurance (QA) and Quality Control (QC) processes follow good practice?
- How burdensome are the reformatting workflows/processes on the organization's resources? Are any parts of the reformatting workflows automated?
- Which specific reference resources are used for establishing standards for each format type (image, text, audio, video, etc.)?
- What files are created in the digitization process (preservation master, access copy, etc.)?
- What file naming protocols are used?
- What metadata procedures are used? (See the Metadata section, below.)

Recommendation bank

- Review digitization procedures for physical preservation implications.
- Document and follow consistent reformatting procedures (e.g. determining file target and minimum standards).
- Determine and follow a file naming protocol.
- Establish or improve internal quality control procedures.
- Document reformatting procedures and evaluate them periodically.
- Establish quality control procedures for reformatting projects.

Born-digital Objects

Institutions often create digital objects that should pass into permanent stewardship. They may also acquire or be interested in acquiring born-digital collections from donors. Establishing and following consistent procedures for creating internal assets, transferring internal assets into stewardship, and acquiring external ones will grow a digital collection intentionally over time.

Considerations

- Is the organization creating digital content for long-term retention (e.g. oral histories, video recordings of events, born digital photographs)?
- Does the content creation strategy correlate to the organization's mission and goals?
- Does the collection development policy address born-digital materials? (See also the Policy Infrastructure section, above.)
- Who has responsibility for documenting procedures for creation of digital content?
- Which specific reference resources are used for guidance in establishing standards for each format type (image, text, audio, video, etc.)?
- Are workflows for digital content creation systematic, programmatic, and consistent?
- How are workflows communicated, disseminated, and evaluated?
- Does the organization provide guidance to digital content creators whose materials will be transferred to the collection in the future? What outreach or education efforts are being made to creators, donors, or potential donors?
- Does the current workflow protect the integrity and authenticity of born-digital materials?
- Do Quality Assurance (QA) and Quality Control (QC) processes follow good practice?
- Are resources sufficient to sustain workflows and processes? What aspects of the workflow are automated?
- What file naming protocols are used?
- What metadata procedures are used? (See the Metadata section, below.)

Recommendation bank

- Align content creation with the collection development policy, mission, and goals.
- Document any mandates or responsibilities for collecting digital materials.
- Plan for transfer and eventual stewardship of born-digital materials.
- Provide guidance and recommendations for content creators whose materials will be transferred to the collection in the future.
- Develop or expand transfer and ingest procedures to address gaps in practice or collections that are currently excluded from the workflows.
- Implement quality control procedures that align with best practices and organizational goals.
- Determine and follow a file naming protocol for born-digital collections.
- Automate workflows where possible.
- Evaluate workflows for efficiency.

Metadata

Metadata is information that describes an item (physical or digital) and facilitates discovery, access, and preservation. Metadata can be categorized as descriptive, such as the title of an item or the date that it was created; technical, such as an item's file format; structural, such as the order of the pages in a book or tracks on an album; or preservation, such as information about the provenance of a born-digital item.

Considerations

- What types of metadata are created and/or collected during digitization?
- What standards are followed for metadata creation, including schema and content standard(s)?
- Are the metadata standards and practices followed appropriate for the materials?
- Is the metadata adequate to describe, find, and preserve collections?
- Who creates metadata?
- How is metadata being stored and managed?
- Are metadata workflows systematic, programmatic, and consistent? When and how are they evaluated?
- How are metadata workflows communicated and disseminated?
- Are resources sufficient to sustain metadata workflows and processes? What aspects of the metadata workflow are automated?

Recommendations bank

- Implement metadata standards for digital projects that are congruent with the organization's goals and appropriate for the format being digitized. For example:
  - Record metadata beyond what is in the file name.
  - Record descriptive metadata and ensure it is accessible to internal staff.
  - Record metadata beyond descriptive metadata (e.g. technical, structural, preservation).
  - Research, document, and implement the use of a standardized metadata schema(s).
- Standardize the recording of metadata (i.e. across an institution, not necessarily following national standards).
- Document metadata practices and procedures and evaluate them periodically. Aim for a consistent and sustainable approach.
- Establish quality control procedures for metadata creation.
- Allow users to access and search metadata.
- Preserve metadata alongside digital assets.

Documentation

Documentation, or the intentional recording of decisions, commitments, procedures, and practices, is one of the most critical activities in which stewards of digital collections engage. Regardless of what particular decisions are made in the course of preservation, documenting procedures and decision-making processes will help staff take the correct preservation actions when they are required.

Considerations

- Are internal procedures and practices documented? Is this documentation clear?
- How comprehensive is the documentation? What documentation is missing?
- Where is documentation kept, and is it easily accessible?
- Is documentation used as a reference by workers?
- Who is responsible for maintaining documentation? How frequently is documentation updated?
- Do all stakeholders have an opportunity to contribute to or comment on documentation?
- Is documentation included in digital preservation activities, so that the documentation is preserved?

Recommendations bank

- Identify the common workflows already in use and begin to write them down.
- Review existing workflow documentation. Determine which procedures and workflows are missing, and prioritize them for development. Focus on documenting essential processes and workflows first.
- Design a way for staff to share and access documentation.
- Ensure procedures are followed consistently across the organization, by both staff and volunteers.
- Implement a regular review process for all documentation, and involve stakeholders involved in creating and reviewing documentation.

TECHNOLOGICAL RESOURCES

Consider the following topics—IT Support, Legacy Media, Data Management Tools, Digital Storage, and Security of Collections and Authenticity of Users—when writing **Section V: Technological Resources** in the assessment report.

IT Support

Digital preservation requires the participation of collections staff to identify materials to preserve and of IT staff to provide some of the storage support required to monitor materials over time. This relationship is similar to physical storage environments. Physical collections require collections staff with specialized knowledge to implement best practices for storage, care, and handling, and also require facilities staff to monitor and service the HVAC or other controls for the physical environment. Similarly, digital materials require collections staff with specialized knowledge to select, store, and monitor materials, and also support from IT staff to service storage environments.

Considerations

- Describe the level of IT support at the institution.
- Describe communication between IT and collections staff.
- Is the level of IT support adequate to achieve the institution's goals?
- Are roles within IT and the collections staff clear? Is there a clear reporting structure?
- How are IT contractors evaluated?
- What IT skills are available within the institution (programming languages, etc.)? How do available skills match with the institution's goals?
- Is professional development specific to digital preservation supported for IT staff?

Recommendation bank

- Establish a working relationship with IT services that includes communication channels to ensure collections needs are understood and met. Document clear, defined roles and reporting structure.
- Evaluate and document whether IT services are adequate for digital preservation work.
- Designate a member of IT services to participate in policymaking (even if IT services are outsourced).
- Invite IT services to a cross-functional decision-making group (even if outsourced).
- Determine what services or tools can or should be self-supported, and work with IT to implement them.
- Establish a rubric for evaluating IT performance (even if outsourced), and collaborate with IT to implement improvements.
- Devise a skill-share initiative so that collections staff and IT staff can learn from each other.
- Advocate for professional development specific to digital preservation for IT staff.
- Ensure collections staff have appropriate advanced skills to implement plans for digital preservation.

Legacy Media

Collections acquired in the last several decades are likely to include some amount of legacy computer media. This could include floppy discs of all sizes and types, optical discs, hard drives, and removable solid state (flash) drives. These objects are at risk of total loss due to hardware and software obsolescence, and they should be surveyed, prioritized for preservation, and transferred off of their original media.

Considerations

- What amount and what types of legacy media are in the collection? Is there an inventory?
- Can the content on legacy media be determined or estimated? Is it likely to be high priority?

- What is the condition of legacy media in the collection? Is the condition assessment information documented?
- How is legacy media protected during processing (e.g. with digital forensics tools)? Is legacy media identified in incoming collections?
- What are the procedures for accessing content on legacy media?
- Have any legacy media collections been prioritized for migration to new media?

Recommendation bank

- Inventory the physical backlog of removable digital media. Note which are not owned by the collecting department.
- Conduct a condition and risk assessment of digital media, then use these to establish priorities for processing and migration.
- Set up a basic workstation for investigating legacy media.
- Develop a procedure for evaluating legacy media in incoming collections.
- Begin proactive investigation of legacy media with donors before donations are accepted or accessioned.
- Prioritize content for preservation and begin migrating content off of legacy media carriers.

Data Management Tools

A variety of software tools are used to manage digital objects as they are preserved. Tools can help keep metadata associated with their objects, add or remove metadata, keep track of master files, automatically generate access files, run reports on objects or collections, make and store redundant copies of master files, and carry out other preservation tasks. There are many approaches to configuring a computing environment that achieves organizational goals, and one size does not fit all.

Considerations

- What systems and tools are used for managing digital collections? For example: systems for access; tools for preservation actions, managing digital files, and organizing metadata; consumer tools such as Google Drive or Dropbox, and electronic records management tools.
- Are there needs related to digital collections that are not being met by current tools, systems, and practices?

Recommendation bank

- Document the process for collecting and organizing digital objects and information about them.
- Inventory tools that are in use. Ensure tools are appropriate for the task.
- Consolidate tool usage if software systems are redundant in their capabilities.
- Ensure staff know what tools are used and are trained to use them.
- Institute a sandbox process for staff to explore and report back about new tools.
- Perform an environmental scan to determine what (other) data management tools are available for each task, procedure, or workflow in place at the institution.
- Establish a cross-functional team to make decisions about the processing and management tools used within the organization.
- Develop processes for the review and sunsetting of legacy software and tools.
- Automate connections between software tools if possible.
- Implement a Digital Asset Management System for organizing and viewing digital assets.

Digital Storage

Safe and monitored storage, with multiple managed copies of digital collections, and sound data backup practices are both core services for digital preservation. Storage architectures do not need to be overly complicated or sophisticated, but they should be intentionally planned rather than assembled haphazardly over time with a collection of ad hoc solutions.

Considerations

- Where are digital collections (both files and metadata) stored? Is there an inventory of storage locations? What storage media are being used?
- How are files organized on storage media (folders, directory, etc.)?
- How many copies are stored? What is the policy on redundancy?

- Who is responsible for managing digital storage?
- What are the workflows for deposit and retrieval? Is there a possibility for collaborative deposit?
- What tools, if any, are used for generating and checking checksums? (See also Data Management Tools, above.)
- Are any digital collections stored outside of the preservation storage environment, even temporarily?
- Is there a policy for collections that is separate from the policy for business use records?
- Is there a plan for storage failure? Have there been failures? Has content ever been restored after a failure or as a test?
- Are servers tested regularly?
- What is the ongoing budget allocation for storage costs? How difficult is it to secure storage expansion?

Recommendation bank

- Create an inventory that documents the locations of all current and potential collections items.
- Organize files.
- Conduct regular, systematic fixity checks (manual or automated).
- Ensure all storage media/infrastructures are subject to regular back-ups. Ideally these will include off-site and geographically dispersed back-ups.
- Ensure all collections are redundantly stored and separately managed across storage media/infrastructures.
- Ensure a staff member has managing storage as part of their job description.
- Designate a collections staff member or group to develop storage policies for objects according to selection priorities. Include an IT staff member who is responsible for storage.
- Draft a five-year plan for storage media refresh and upgrade.
- Document processes for depositing materials. Follow them consistently.
- Automate processes for storage ingest and maintenance.

Security of Collections and Authenticity of Users

Authenticity describes collections in which "the digital material is what it purports to be." This means that nothing about the item has been changed, either on purpose or accidentally, since the time the item was created.[2] Institutions ensure authenticity by employing a variety of strategies, including limiting access to collections based on staff roles and responsibilities as well as running regularly-scheduled checks on the integrity of digital files.

Considerations

- What kind of users have access to the organization's master files and metadata?
- What can each type of user do with files once they have accessed them? For example: read, write, access, or manipulate.
- How does the organization manage permissions?
- How does the organization document and monitor authenticity/data integrity? How does the organization track changes that are made to digital objects?
- How is access limited? How does the organization's technology support limiting access?
- How is embargoed content, if any, managed?
- Are there documented workflows for authenticity checks? (See also the Policies & Workflows section, above.)
- If the organization works with vendors, what are the vendors' security and authenticity practices?

Recommendation bank

- Document the chain of custody of digital collections. This can be done manually at first, but the goal is to document chain of custody in standardized metadata.
- Develop a sustainable approach for checking fixity of objects at various points in their lifecycle.
- Implement and enforce a robust access policy with enough defined roles to support secure use by all levels of staff and outside users. Ensure staff understand the levels of permissions.
- Use technological tools to enforce access policies, and log access to preservation files.
- Record any actions performed on a file in its metadata.

2 Glossary, *Digital Preservation Handbook,* Digital Preservation Coalition, http://dpconline.org/handbook/glossary.

SECTION 2:

Templates

ASSESSMENT ONE-PAGER

This one-page handout is written for the stakeholders and administrators in an institution pursuing a digital preservation assessment. The second half of the handout can be customized with details of the institution's planned assessment and thereby serves as a reference for all participants. Providing all parties and decision-makers with this information contributes to building a foundation of support for digital preservation actions.

Fillable and editable versions of this template are available at www.nedcc.org/publications.

Digital Preservation Assessment

What is it and why does it matter?

What is digital preservation? Digital preservation combines policies, strategies, and actions to ensure long-term access to content that is born digital or converted to digital form, regardless of the challenges of file corruption, media failure, and technological change. Digital preservation is an ongoing process, not a one-time activity, and must be addressed programmatically. Digital preservation involves more than creating backups of files. (*Definitions of Digital Preservation*, Association for Library Collections & Technical Services, http://www.ala.org/alcts/resources/preserv/defdigpres0408)	**Why do we need digital preservation?** Digital files become inaccessible over time unless they are managed and migrated to new technology as needed. Even content that resides on a website or social media site is at risk.
What is a digital preservation assessment? The digital preservation assessment helps an institution assess and document its digital preservation needs through a site visit and report completed by a consultant. The site visit involves discussions with digital preservation stakeholders at the institution, which may include IT staff, collections managers, administrative staff, and other interested parties. Following the site visit, the consultant records observations and recommendations in a report intended to guide the institution in improving their digital preservation practices. The assessment focuses on preserving digital objects, which may in part address digitization practices and techniques, but digitization is not the main focus of the assessment.	
Institution responsibilities • Work with consultant to schedule a site visit • Schedule with relevant staff that may be needed to participate: IT staff, collection manager(s), administrative staff, others • Attend meetings and discussions about digital collections and digital preservation practices and needs	**Consultant responsibilities** • Work with the institution to schedule a site visit • Facilitate meetings and discussions about digital collections and digital preservation practices and needs • Provide a written report documenting findings in the visit and making digital preservation recommendations

Digital Preservation Assessment for [Institution]	
Assessment Date	
Consultant	
Assessment Primary Contact Name	
Assessment Participant Names List all staff members participating in the assessment. Which staff participate depends entirely on the institution and its structure, but participants may include: • Administration • Archivist • Collection Manager • Digital Collection Manager • IT Staff (in-house or contracted) • Preservation Librarian	

PRE-VISIT QUESTIONNAIRE

The Digital Preservation Assessment pre-visit questionnaire is given to the client as far as possible in advance of the site visit. The client contact will need the help of others in the organization to answer the questions, and this takes time. The client should return the completed questionnaire to the consultant one to two weeks before the site visit so that the consultant has time to review it.

Fillable and editable versions of this template are available at www.nedcc.org/publications.

Pre-Visit Questionnaire

Digital Preservation Assessment

This questionnaire will prepare you for the Digital Preservation Assessment, inform the digital preservation assessor prior to the site visit, and highlight areas that require specific attention during the visit.

Please fill out the questionnaire **to the best of your ability**. As you do so, you will need to identify appropriate staff members who can help you answer the questions. For this reason, *we recommend that you begin filling out the questionnaire at least four weeks before the site visit*. Please send the completed questionnaire to your assessor one to two weeks before the visit.

Note: It is important for your assessor to have an accurate understanding of *current practice* at your institution. Please be as transparent as possible about practices and procedures that are followed on a daily basis.

Institution:

Contact person & title:

Street Address:

Telephone: Email:

Questionnaire completed by: Date:

Return to: Email:
Return by date:

THE ORGANIZATION

Institutional Profile

1. Name of the collecting entity or department that will receive the assessment visit and report (e.g. Archives & Special Collections, local history room, town clerk's office, etc.):

2. Name of the parent institution (e.g. university, corporation, or other sponsoring body):

3. Give a general history of the institution (or provide a URL for institutional history) and the collecting unit specifically.

4. Provide an organizational chart that includes all of the units involved in digital collections. If you do not have an official org chart, then please *draft an informal one and attach it.*

Project Background

The following information will help the assessor understand your institution and the importance of your materials. *If your digital preservation assessment has been funded by a grant, feel free to photocopy/scan and attach the narrative portion of your application.*

1. What are your goals for this digital preservation assessment?

Preservation Program

1. How does your organization manage preservation for all collections (i.e. physical and digital)? For example: Is there a preservation committee or a history of preservation grants? Has your organization gone through an assessment in the past?

2. Which parts of your organization have responsibility and/or authority for digital collections and digital preservation?

3. Do you have a preservation plan for either physical or digital collections?

Collections

1. Describe the digital assets held by your institution; think broadly. For example, is your organization creating podcasts? Are you responsible for caring for your electronic records?

2. Which of these assets are formally part of the collection (accessioned and managed)?

3. Are there assets that should be preserved in the long term but that are not currently a part of any collection? What are they?

Users

1. List your public access points for digital materials (e.g. URLs for digital collections or a description of access in the reading room).

2. Describe your user community. Include reference statistics if available (visits per year, collections accessed per month, etc.).

STAFF & RESOURCES

Staffing and Roles

1. Please use this table to summarize your staffing for digital preservation. *Be as inclusive as possible and make sure to list all people that will be participating in the site visit*.

Name	**Job Title**	**Description of background and training in digital preservation**	**Job description and responsibilities in digital collections/preservation**

Staff Training

1. Does your team have access to professional development funding? If so, how much? Describe how and when it is allocated.

2. What professional development opportunities have staff members participated in in the last three years (related to digital collections)?

3. Briefly describe collaborative projects that your institution has participated in related to digital collections.

Budgeting and Resources

1. Please estimate the annual spending for **digitization** (costs associated with digitizing in-house using staff and volunteers and/or paying vendors to digitize). Include any present or past grant-funded projects.

2. How are the digital preservation activities listed below funded (operating funds, ad-hoc allocation, grants, etc.)?

   - Staffing
   - Software
   - Hardware
   - Services (outsourced reformatting, external tech support, other)

POLICY INFRASTRUCTURE

Collection Development

1. Does the **collection or department** have a specific mission statement? *Please attach a copy or summarize it here*.

2. Do you have an active collection development policy for digital collections? If so, *please provide the written document*.

3. Do you have any legal mandates or obligation to collect particular digital materials?

4. Are there digital materials you do not accept (e.g. certain formats or content)?

Selection for Digitization

1. How do you select and prioritize collections and items for **digitization**?

2. Is your digitization selection policy documented? If so, *please provide the written document*.

3. Do you collect born-digital objects? If so, what types?

4. Describe any technical specifications in place for digitization or born-digital objects accessioned into the collection.

Copyright

1. Do you have any policies related to copyright or intellectual property? If so, *please provide the written document*.

PROCESSES & WORKFLOWS

Reformatting

1. Do you have written procedures for in house reformatting or quality control activities? If so, *please provide the written document.*

2. Do you have written technical specifications for your digital objects (e.g. format types, file naming protocols, metadata procedures)? If so, *please provide the written document*.

Born-digital Objects

1. Are you creating your own digital content (e.g. oral histories, video recordings of events, born-digital photographs, other)?

2. What standards are you following for digital content creation?

3. Are there documented procedures and workflows for creation of digital content? If so, *please provide the written document.*

4. Who has responsibility for documenting procedures for creation of digital content?

Metadata

1. What metadata do you create or collect during digitization?

2. How is metadata created, stored, and managed?

3. Who is responsible for metadata creation and documentation?

4. Do you have documented guidelines or workflows for recording metadata? If so, *please provide the written document.*

5. What standards do you follow for metadata creation, including schema and content standard(s)?

TECHNOLOGICAL RESOURCES

IT Support

1. Describe IT support for your digital collections.

Legacy Media

1. What physical carriers of digital media are in your collections (floppy discs, zip drives, hard drives, CDs or DVDs, etc.)?

2. Do you have an inventory of legacy carriers? Do you identify legacy media in incoming collections?

Data Management Tools

1. What software and tools support digital collections activities? Please list them and their various uses within the organization.

Digital Storage

1. How are your digital collections stored (both preservation/master files and access files)? Select all that apply:

   - Local servers
   - Commercial cloud storage (e.g. Amazon S3, DuraCloud, Google Cloud Storage)
   - Computer hard drives
   - Consortium servers
   - Distributed storage (e.g. LOCKSS, MetaArchive)
   - External media (e.g. CD/DVD, flash drive, tape)
   - Institutional digital repository service
   - Other digital libraries
   - Other digital repository services
   - Social media sites (e.g. Flickr, Instagram, YouTube, Facebook)
   - Vendor/hosted storage (e.g. OCLC)
   - Not sure
   - Other (please describe)

2. Describe procedures you have for redundant storage or back ups.

3. Who manages storage and backups?

4. Have you experienced storage failures or data loss? Have you ever restored content after a failure or as a test?

Security of Collections and Authenticity of Users

1. Who can read, write, access, and/or manipulate the files?

2. Who can read, write, access, and/or manipulate the metadata?

3. Do you check files for unintended changes at any point in their lifecycle?

ASSESSMENT REPORT

The Digital Preservation Assessment report template is divided into sections that parallel the sections in the framework and the pre-visit questionnaire.

It is helpful for the institution to review a draft of the report before it is finalized in order to correct factual errors, if any. The assessor should follow up after the completed report is delivered, as this will help maintain the institution's momentum toward beginning to implement the report's recommendations.

Fillable and editable versions of this template are available at www.nedcc.org/publications.

Digital Preservation Assessment Report

[Institution]
[City, State]
[Date of site visit]

Submitted on [Date] by:
[Name] [Title]
[Email address]

This report is based on materials produced by NEDCC and LYRASIS with the support of the National Endowment for the Humanities.

TABLE OF CONTENTS

Executive Summary

Introduction

I. The Organization
- Organizational Structure
- Designated Community

II. Staff and Resources
- Staffing and Roles
- Staff Training and Community of Practice
- Budgeting and Resources

III. Policy Infrastructure
- Mission and Strategic Planning
- Digital Preservation Policies

IV. Processes and Workflows
- Content Creation
- Metadata
- Documentation

V. Technological Resources
- IT Support
- Legacy Media
- Data Management Tools
- Digital Storage
- Security of Collections and Authenticity of Users

Conclusion

Appendices

EXECUTIVE SUMMARY[3]

On DATE, the digital collections at the INSTITUTION were assessed for planning purposes by NAME, TITLE of COMPANY. The goals of the assessment were to document the state of digital preservation at the INSTITUTION, identify challenges and opportunities for improvement, and make recommendations for preserving the INSTITUTION museum's unique digital collections. Observations and recommendations are based on a pre-visit questionnaire, a full-day site visit, and discussions with staff members.

[A brief overview of institutional history as it relates to digital collections] INSTITUTION began creating digital content in approximately 2003, beginning with photographs of art objects and expanding to digitization of Library collections in 2009. The Museum accessioned its first digital media artwork in 2011, and the Library began purchasing PDF's from curators in 2013. The INSTITUTION'S Media Department creates time-based media of exhibits, interviews, and events. Since 2013, efforts to manage growing digital collections have developed across the Collection Services Department and Library, though these efforts have not been coordinated by an overarching strategy.

[Acknowledgment of recent activities or current practices] On the day of the visit, staff enthusiasm about and commitment to developing preservation practices and procedures was clear. It was also evident that many preservation practices up until this point had been developed by individuals in separate branches of the Department, and those individuals did not specifically have digital preservation as part of their official title or job duties. It is encouraging to see that recently the Museum had hired NAME as a Digital Asset Manager and formed the Digital Team to provide access to digital materials in the Museum. This practice of creating an explicitly titled role and forming a team of stakeholders across the institution is an excellent model for addressing digital preservation concerns. Hiring a digital preservation manager and forming a digital preservation team will help to ensure that policies and procedures are developed efficiently and implemented consistently.

As INSTITUTION continues to grow its digital collections and further develop its strategies to preserve them, it faces several challenges, including:

- [choose some larger obstacles or themes to highlight, such as these examples]
- The need to expand the recent restructuring of the Department to allow for a sustainable, interdepartmental approach to digital preservation;
- Lack of staff time and direction available for acquisition and preservation of digital collections, including electronic records;
- Lack of policies regarding the acquisition and preservation of digital materials, in particular digital media art and other born-digital items; and
- A history of ad-hoc, tools-oriented procedure implementation.

3 This is an example of an Executive Summary. Information about the institution included here should be drawn from, and less detailed than, the institutional profile in the Introduction section of this report.

With these challenges in mind, efforts over the next 1-2 years should focus on:

- [choose some larger strategic themes to highlight, such as these examples]
- The creation of a digital preservation manager position for the Collection Services Department and organization of a digital preservation team;
- Prioritizing unique digital materials and digital media art from routine digital records created by the institution;
- Engaging in a strategic planning and policy process to support effective procedure development; and
- Revisiting job descriptions for all staff working with digitization and digital preservation.

In order to best care for digital collections, actions in the foreseeable future should focus on developing and implementing policies centered on digital preservation across the organization from a centralized team of stakeholders. Additional recommendations for procedural and strategic activities are made throughout this report.

I am glad to have had the opportunity to work with the INSTITUTION on this project. It was a pleasure to spend time with the staff and to learn about the various collections, and I look forward to assisting INSTITUTION with other initiatives. If this report has raised any questions, or if I can provide any additional information, please do not hesitate to contact me.

Respectfully submitted,

[Name]
[Title]
[email address]

INTRODUCTION

A. Institutional Profile[4]

Established in YEAR, the INSTITUTION was formed through the consolidation of the INSTITUTION and INSTITUTION. With roots in these diverse and historically significant collections, INSTITUTION maintains and displays art from across the globe, including that of the Americas, Asia, and Africa. Owing to its unique legacy, it has a particularly robust maritime art and history collection as well. INSTITUTION also manages 10 historical buildings and thousands of manuscripts and bound volumes.

The manuscripts and bound volumes are retained by the INSTITUTION LIBRARY. Drawing from its roots as the legacy of the libraries of the INSTITUTION and INSTITUTION and containing the donated bound volumes and manuscripts of donors, the INSTITUTION Library possesses a rich collection of historical resources.

The Library and the Museum serve patrons and visitors from around the world and continue to devise new ways to access and experience their collections. In recent years, the Library has digitized a growing number of collections, and the Museum has begun to accession and exhibit digital media art. Since 2016, INSTITUTION has initiated exciting changes to the ways collections are managed at the Museum. NAME joined as the TITLE and the Director of the INSTITUTION LIBRARY, combining collection services and Library management for the first time in the Museum's history. Developments such as these make an assessment of digital preservation practices timely and appropriate for the Museum as it continues to develop its collection management practices in both the Library and Museum.

Digital Collections

In approximately 2003, INSTITUTION began creating digital content in the Museum through photographs of art objects. The rate with which digital collections were created expanded rapidly around 2009 as the Library began to digitize materials and more Museum collections were photographed. In approximately 2011, the Museum and Library began to collect a variety of digital resources as well; in 2011, the Museum accessioned its first digital media art, ArtTitle, which was a site-specific projection installation created for the Museum using digitally imaged items from the Library's collection, and the Library began to purchase PDF's from curators in 2013. Additionally, INSTITUTION formed the Media Department in 2011, which creates time-based media of exhibits, interviews, and events, further augmenting the variety and quantity of digital content managed by INSTITUTION.

B. The Digital Preservation Assessment

Definitions

For the purposes of this report, digital preservation is defined as follows: "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."[5]

Throughout the report, the word "staff" is used to indicate anyone responsible for collections care, whether they be professional staff, interns, volunteers, or some combination thereof.

4 This is an example of an Institutional profile as a part of the Introduction. An edited version of this profile should be included in the Executive Summary.

5 Definitions of Digital Preservation, Association for Library Collections and Technical Services, http://www.ala.org/alcts/resources/preserv/defdigpres0408.

Process
The goals of the assessment were to document the state of digital preservation at the INSTITUTION, identify challenges and opportunities for improvement, and make recommendations for preserving the museum's unique digital collections. The following report is based on a pre-visit questionnaire, meetings with digital preservation stakeholders during the visit, and follow-up correspondence with the following library staff:

- NAME, TITLE
- NAME, TITLE
- NAME, TITLE

The objectives of the Digital Preservation Assessment are to:

- Evaluate institutional policies and procedures as they apply to digital preservation;
- Review digital collections management for preservation outlook, including intellectual control;
- Review digitization and digital preservation policies;
- Evaluate roles and responsibilities of staff affecting digital preservation, and
- Assess the current digital collections for risk of loss and recommend mitigation strategies.

Report
This report is intended for continuing reference by this institution and its staff. Each section includes observations and recommendations; recommendations are bulleted and in bold type. Staff members are likely to change over time, but this report can be used for several years as a roadmap to priorities and as a foundation on which to build a digital preservation program. Over time, as digital collections evolve and preservation projects are accomplished, another assessment may be needed to identify new priorities.

I. THE ORGANIZATION

A. Organizational Structure

Creating and caring for digital materials and collections over time poses significant challenges and requires a commitment across departments and in all levels of the organization. Having an organizational home for strategic direction is a key first step towards responsible stewardship of digital materials.

An authoritative body that can prioritize and achieve short- and medium-term goals is important for any organization-wide program; however, the special challenges posed by digital preservation make having a centralized decision-making group even more important. The inherent interdisciplinary approach required—involving input from every group of stakeholders, from IT services to end-users—and the multi-level decision making that underpins launching and managing a new program makes isolated efforts unsustainable.

Observations & Recommendations

[See Section I:B of this template for an example of Observations & Recommendations]

B. Designated Community

The concept of the *Designated Community* was developed and refined in the OAIS reference model and has become an important facet of planning for preservation, whether of digital or physical collections.[6] Drafting a Designated Community Statement that describes users by their knowledge, interest, location, demographics, or other characteristics provides an underpinning for collection management, selection, and access decisions and supports a consistent approach to resolving new problems as they arise. Knowing whom an institution serves is just as important as knowing what objects and programs it manages for its users.

Observations & Recommendations[7]

The INSTITUTION has a broad understanding of the community it serves. As a public library, the most obvious and central group of users is made up of local residents who rely on the library for services related to education, assistance, entertainment, and community engagement. The Special Collections has a traditional research library collection that is regularly exhibited, but the specific groups of users that are most interested in this collection are not as defined as are they are for the circulating collection.

The digital collections are an extension of the Special Collections, and staff have an uncertain understanding of the user community that engages with these collections. It became clear during the site visit that a major challenge in articulating a vision, and therefore a plan, for the digital collections is this lack of clarity. Without an investigation of the current and potential users for both the broader Special Collections and the digital collections, it will be difficult to plan for the growth of the collections and develop services for these groups over time.

A Designated Community Statement and the data that underpins it will have a demonstrable impact on the planning of digital preservation and access services, and it will be extremely valuable in articulating an overall strategy for the library.

- **Early in the digital preservation planning process there should be an information-gathering stage which helps identify various user groups. Surveys, focus groups, use statistics, and other sources may be used or combined to gather this information.**
  - As INSTITUTION is a very large institution with vast collections, it may be best to hire a market research consultant to plan and facilitate this project.
- **Draft a Designated Community Statement, taking into account the different user groups that make up INSTITUTION'S constituency.** Much like a mission statement, a Designated Community Statement can be revised on occasion, but it will generally be a stable foundation on which to build and evaluate programs. Unlike a mission statement, a Designated Community Statement can be an internal planning document, rather than a public statement. Both external and internal users of collections, as well as organizational partnerships, should be considered.

6 *ISO 14721:2012 Space data and information transfer systems—Open archival information system (OAIS)—Reference model*, International Organization for Standardization, https://www.iso.org/standard/57284.html.

7 This is an example of an Observations & Recommendations section.

- A sample designated community statement that addresses both internal and external users can be found at Indiana University: https://wiki.dlib.indiana.edu/display/DIGIPRES/Designated+Community

- The statement should eventually be accompanied by guidance for how the community will be engaged in decision-making processes during the feasibility and planning stages for digital preservation.

II. STAFF AND RESOURCES

A. Staffing and Roles

A sustainable digital preservation program requires staff to perform digital preservation activities as a part of their everyday work. In practical terms, this means formalizing those obligations in staff job descriptions and work plans, as well as giving adequate time to do this work and implement inevitable changes.

It is common for staff at a variety of types of institutions to adopt digital preservation activities in an ad hoc manner as digital collections grow, both leaving gaps as well as creating areas of overlap. At times it can be difficult to determine whether certain responsibilities should be managed by collections staff or IT services. A digital preservation manager, or a digital preservation team that manages the program together, will ensure coordinated and sustained preservation of digital collections and will be responsive to changes in strategic direction over time.

Observations & Recommendations

B. Staff Training and Community of Practice

Digital preservation is an ever-evolving and relatively new area of expertise for institutions collecting cultural heritage material. As newer technologies develop, staff at these institutions must stay current with the latest developments in digital preservation. General conferences and continuing education courses can be helpful for benchmarking programmatic progress or learning about emerging trends. In order to gain practical skills and learn approaches that will work locally, attending more focused conferences, tools-based workshops, and user group meetings might be most useful. Professional development should not be seen as a privilege for individual staff members but rather as a rational approach to closing skills gaps in order to meet an institution's strategic goals.

Not only is advocacy across an institution vital to digital preservation success, but finding and creating communities of practice has also been proven to be a successful tool for digital preservation planning.[8] A community of practice is a group of institutions that collaboratively works towards furthering its digital preservation knowledge and practices. Developing these peer networks can help staff collaboratively solve and strategize about common problems in different environments; collaboration may offer opportunities to review the success and challenges of implementing certain digital preservation or content management tools and to connect with staff in similar roles in different types of organizations.

Observations & Recommendations

8 "From Theory to Action: Good Enough Digital Preservation for Under-Resourced Cultural Heritage Institutions," http://commons.lib.niu.edu/handle/10843/13610

C. Budgeting and Resources

Storage, access, and other ongoing digital preservation activities require budgetary support. Expenditures for software, hardware, and services are a consideration for both the near-term, beginning phase of establishing a digital preservation strategy, and for the long-term, ongoing maintenance of a digital preservation program. Because digital preservation costs, such as subscription services or cloud storage, are ongoing, it is difficult to support digital preservation activities with one-time grant funding, making an ongoing commitment through operating funds vital. A regular budget allocation for digital preservation costs helps sustain digital preservation efforts by providing a known funding source for maintenance, hardware upgrades, and a digital asset management system to access collections. Often, in an institution with digital collections, significant expenditure is already present but is hidden in IT or other budget lines that have grown without specific planning for digital preservation. Identifying these costs can help provide a realistic budget for the current program and plan for growth.

Observations & Recommendations

III. POLICY INFRASTRUCTURE

A. Mission and Strategic Planning

As with all programs and services, creating an effective and sustainable digital preservation program begins with reviewing the mission of the organization. It is not a foregone conclusion that a collecting institution will commit to preservation as a central function; naming this commitment in a mission statement and other guiding documents is the best way to ensure the future of the collections no matter their format.

In addition to a strong mission statement, a strategic plan for digital collections ensures that projects follow a cohesive direction and that the program builds on success over time. Whether a plan for digital preservation is included in an institution-wide strategic plan or as a standalone plan just for the collections, it should describe the organization's vision and goals for digital collections. As with all strategic planning, the process should be transparent, include all the stakeholders within the institution, and be reviewed at a regular interval.

Observations & Recommendations

B. Digital Preservation Policies

Digital preservation is best guided by a policy document, or set of documents, drafted and adopted at the administrative level. These policies provide consistency across an organization over time; communicate decisions and procedures for ongoing activities, and serve as an important record of decision-making for future stakeholders. The following policy areas are important but do not make up an exhaustive list. Organizational planning and staff professional development will reveal other areas that require policy development.

1. Collection Development

Physical collections are best acquired by relying on a written collection development policy, and digital collections are no different. A digital collection development policy specifies what subject, formats, or other areas of focus an institution primarily collects. In addition to serving as a guiding document for staff, digital collection development policies also constitute a mandate for digital preservation when approved by an organization's administration. As with other policies that support digital collections, this policy may approach digitization priorities and born-digital acquisition separately or in a single document. Basing a collecting

focus on the mission and community needs of the organization will ensure that the collections remain a priority for investment into the future.

Observations & Recommendations

2. Selection for Digitization

Because digital preservation requires planning and investment over time, it is important to be selective about the digital objects that are brought into the collections that are designated for long-term preservation. The volume of born-digital and digitized materials only continues to grow, and making informed decisions about what to accession into digital collections is important for maintaining long-term access. While digital storage has become less expensive over time, there are long-term costs for storing and maintaining digital materials.

Born-digital collections require specific considerations for selection. It is important to consider the item's value to the collection, as well as the technical resources at hand for preservation. A selection policy that addresses born-digital materials can be amended over time, as the organization and staff gain capacity.

Selection policies should address *digital surrogates* as well. Individual scans created at a reference desk may not be worth maintaining in a preservation environment, but digital images created to serve as a faithful representation of the analog original as well as reformatted audiovisual materials are usually worthy of long-term preservation.

Observations & Recommendations

3. Preservation Plans

Just as understanding the vulnerabilities of physical formats leads to specific preservation planning for analog collections, a growing understanding of the vulnerabilities of digital collections should lead to specific preservation planning for digital materials that goes beyond a one-size-fits-all data backup approach. Redundant copying, storage architectures, and metadata are just some of the strategies used to preserve different types of digital objects according to their specific needs. Born-digital objects and video content may require different long-term approaches than other, simpler materials. Normalization and migration are practices that might be appropriate for certain digital objects.

Not every organization needs or has the ability to create preservation plans for all collections in their care at once. Expertise and policy adoption will develop time, and the goal should be to get all items selected for permanent digital collections into a preservation environment managed at the institutional level.

Observations & Recommendations

IV. PROCESSES AND WORKFLOWS

A. Content Creation

Digital collections may be created through digital reformatting, or through regular business or artistic creation. As in preservation of physical collections, knowing how a digital file was created and understanding its risks helps inform preservation decisions throughout its lifetime. Oftentimes a collecting institution can determine or advise in the creation of digital objects in order to make it easier to preserve them in the future. These determinations should be guided by standards informed by best practices to ensure that policies are implemented consistently and serve the institution's goals for preservation.

1. Reformatting

Observations & Recommendations

2. Born-digital Objects

Observations & Recommendations

B. Metadata

Metadata is information that assists in the discovery and preservation of digital objects. While many cultural heritage institutions have focused on providing good descriptive metadata to ensure access to digital materials, it is also important to include technical, administrative, and preservation metadata. Following standards set by the library and archives fields regarding these types of metadata demonstrates authenticity and transparency and follows best practices.

Metadata is also maintained as a digital object. It may be stored in the form of an XML document, within a Digital Asset Management System, as a spreadsheet, or in other formats. Preserving this information and its connection to the digital files will help people in the future understand the digital collections. Institutions frequently invest significant time and effort in creating descriptive metadata for digital collections, and that investment should be valued and protected by maintaining the metadata itself along with the digital collections.

Observations & Recommendations

C. Documentation

Several areas in this report reference developing written drafts of policies and procedures. Documentation —the internal recording of decisions, commitments, procedures, and practices in a work setting—is one of the most critical activities stewards of digital collections engage in. Regardless of what particular decisions are made in the course of preservation, documenting procedures and decision-making processes will help future employees take the correct preservation actions when they are required.

Observations & Recommendations

V. TECHNOLOGICAL RESOURCES

A. IT Support

Support for digital preservation requires collaboration from collections staff to identify materials to preserve and from IT to provide some of the storage support required to monitor materials over time. This relationship is similar to physical storage environments. Physical collections need specialized knowledge from collections staff to implement best practices for storage, care, and handling, but also require facilities staff's expertise to monitor and service the HVAC or other controls for the physical environment. Digital materials still need the specialized knowledge to select, store, and monitor materials from collections staff, and IT staff's expertise to contribute to the design and implementation of the approaches.

Observations & Recommendations

B. Legacy Media

Legacy carriers are media that are no longer widely used, but were once popular for sharing or storing digital content. This includes CDs, flash drives, zip drives, floppy disks, and more. Legacy media present specific risks to the digital collections they carry. As these media become obsolete, institutions will find it increasingly difficult to extract their contents and move them to more stable storage solutions. Additionally, materials on legacy media are difficult to monitor, backup, and manage given that they need to be manually connected to a computer to be accessed. This makes the collections on legacy media at an increased risk of loss. Given these shortcomings, institutions should work quickly to identify and transfer materials on legacy media for incorporation into a higher quality storage environment.

Observations & Recommendations

C. Data Management Tools

When preserving digital collections, software tools are necessary to manage the digital objects being stored. The ultimate goal should be a set of tools and configurations that automates preservation activities as much as possible and does not cause undue burden on staff time. Depending on the tools used, these software tools help keep metadata associated with their objects, add or remove metadata, keep track of master files, automatically generate access files, run reports on objects or collections, make and store redundant copies of master files, and other preservation tasks. There are many approaches to configuring a computing setup that achieves organizational goals, and one size does not fit all.

Observations & Recommendations

D. Digital Storage

Digital storage for preservation involves more than just identifying space on a server and performing regular backups. Storing digital materials marked for preservation involves redundant, managed storage, where copies are isolated from each other and regularly monitored for fixity and file integrity. Simple backups are insufficient for preservation, because they involve disk images that copy mistakes and data corruption without detecting these issues. When files are managed in a preservation storage environment, these files are regularly monitored for such mistakes and ideally stored in many locations to minimize risk.

Digital collections do not need to be collocated onto a single type of storage device, or a in a single storage arrangement. But the devices used should be able to be connected to software tools that can help manage their integrity over time, including authentication of staff who should have access to original objects.

Observations & Recommendations

E. Security of Collections and Authenticity of Users

Authenticity is the concept of providing access to primary source material that is authentic and reliable. Authenticity has been identified as part of the Core Values of Archivists, as adopted by the Society of American Archivists.[9] Unlike analog materials, it is not obvious when a change to a digital object has occurred, so it is important to adopt a risk management strategy that takes this fact into account. Tightly controlling access to master files, logging that access, and recording any intentional changes to objects (such as any movements or preservation actions taken) are good ways to manage the risk of inadvertent changes or deletions.

Generating and reviewing checksums, a process also known as fixity checking, is a standard way to verify whether an item has changed during transfer or storage. A checksum is a unique string of characters that is associated with the file in its exact iteration at the time of the checksum's creation. If the file changes at all, and a checksum is generated again, then the original checksum and the new checksum will not match. If a file stays the same, the checksum generated will remain the same. Running checksums and storing them with files is an important part of risk management, but it is not a replacement for well-thought-out access and permissions policies. Developing these policies is often a higher priority than instituting technical fixity workflows.

Observations & Recommendations

CONCLUSION[10]

Staff at the INSTITUTION clearly demonstrate a passion and a drive to steward digital collections moving forward. Staff have worked hard to formalize practices where possible and work closely with the IT Department to develop storage solutions for growing digital collections. Staff in the Library and the Museum also recognize their challenges going forward. In a large department with multiple branches, preservation practices and policies have been developed in isolation of one another, and many official titles and job duties have not been updated to include digital preservation activities already taking place. Staff understand that, moving forward, it will be important to develop policies and procedures in a more centralized fashion.

The decision to pursue a digital preservation assessment attests to an interest in improving the long-term outlook for digital collections, and if this report spurs the development of a robust preservation program to match the vision held amongst the museum staff and board, the INSTITUTION'S digital collections will be much more sustainable into the future.

9 *SAA Core Values Statement and Code of Ethics*, Society of American Archivists, https://www2.archivists.org/statements/saa-core-values-statement-and-code-of-ethic.

10 This is an example of a Conclusion section.

[Repeated from Executive Summary] As INSTITUTION continues to grow its digital collections and further develop its strategies to preserve them, it faces several challenges, including:

- [choose some larger obstacles or themes to highlight, such as these examples]
- The need to expand the recent restructuring of the Department to allow for a sustainable, interdepartmental approach to digital preservation;
- Lack of staff time and direction available for acquisition and preservation of digital collections, including electronic records;
- Lack of policies regarding the acquisition and preservation of digital materials, in particular digital media art and other born-digital items; and
- A history of ad-hoc, tools-oriented procedure implementation.

With these challenges in mind, efforts over the next several years should focus on:

- [choose some larger strategic themes to highlight, such as these examples]
- The creation of a digital preservation manager position for the Collection Services Department and organization of a digital preservation team;
- Prioritizing unique digital materials and digital media art from routine digital records created by the institution;
- Engaging in a strategic planning and policy process to support effective procedure development; and
- Revisiting job descriptions for all staff working with digitization and digital preservation.

I am glad to have had the opportunity to work with the INSTITUTION on this project. It was a pleasure to spend time with the staff and to learn about the various collections, and I look forward to assisting INSTITUTION with other initiatives. If this report has raised any questions, or if I can provide any additional information, please do not hesitate to contact me.

Respectfully submitted,

[Name]
[Title]
[email address]

APPENDICES

[Add any appendices that are needed to assist the institution with implementing the recommendations.]

SECTION 3:

Glossary

GLOSSARY

- **Access File:** A compressed version of a digital object intended for access and use by patrons.
- **Access Point:** A means through which collections are accessed. In the case of digital collections, this may be a URL.
- **Analog Object:** An object that is made of physical material. This term is often used in contrast to the term "digital object."
- **Authenticity Check:** The process of ensuring that a file is what it is expected to be and has not been altered, corrupted, or damaged in any way. Also known as "fixity check." See: Fixity.
- **Backup:** A complete copy of a file that is stored and preserved for the purpose of replacing the master file in the case of data loss.
- **Born-Digital:** Describes an object originating in electronic form as opposed to an object originating in an analog, or physical, form.
- **Checksum:** A numeric value that is generated and assigned to a digital object and used to validate the object's integrity.
- **Compression:** The reduction of file size for processing, storage, and transmission. Image and sound quality may be affected by the compression technique or the amount of compression. There are two types of compression, lossless and lossy.
- **Compression, Lossless:** This type of file compression reduces the storage space needed without loss of data. For example, an image compressed by lossless compression is identical to the original image.
- **Compression, Lossy:** This type of file compression reduces the storage space needed by discarding information that is considered redundant. This loss of data is often not perceptible to the human eye at normal resolution.
- **Consortial Website:** An internet site through which associated or partnered institutions collaboratively provide access to digital content.
- **Content Management System:** A software or platform intended to facilitate the management of and access to digital files. Common examples include, but are not limited to, CONTENTdm and ArchivesSpace.
- **Cloud Storage:** A service model in which digital content is managed, backed up remotely, and made available to users over the internet.
- **Database:** A structured data set designed to facilitate the organization of and ease of access to information.
- **Dedicated Workstation:** In the context of digital preservation, this is a local computer or laptop station through which users are given access to digital content that is typically stored on an internally shared drive or external hard drive.
- **Digital Collection:** A grouping of electronic objects. Digital Collection may refer to an institution's entire repository of electronic files or to a subset of files.
- **Digital Resource:** This is an item existing in electronic form that may contain any variety of content such as simple text, still image, video, or audio. Also referred to as a digital file, digital asset, digital object, or digital material.
- **Digital Preservation:** The practices involved in stewarding electronic content, such as files, for future access.
- **Digitization:** The act of reformatting an analog object into a digital object.
- **External Media:** Peripheral storage devices that are not housed within the computer and that can be removed or added to the computer as needed to access the stored content. Examples include floppy discs, optical discs, and USB drives.
- **Emulation:** The alteration of a computer so that it can run software that appears as if the software were running on the original hardware for which it was designed.
- **File Format:** A particular way that data is arranged in a file so that it can be read by computer software. Examples include JPEGs, TIFFs, and Word DOCs.

- **Fixity:** The state of remaining unaltered. This term is used to characterize the ideal, unchanged state of digital objects. See: Authenticity Check.
- **Information Technology (IT):** The use of computer systems for storing, retrieving, and sending electronic data.
- **Legacy Carrier:** Storage media that is considered obsolete. Examples include floppy discs, magnetic tape, and optical discs.
- **Master File:** A complete version of a digital object intended for long-term storage and preservation.
- **Metadata:** Structured information that helps to describe, manage, preserve, retrieve, and deliver a digital object.
- **Metadata Schema:** A standardized series of fields used to characterize a digital object. Metadata may be generated in-house or copied from external standards, which include, but are not limited to, Dublin Core, PBCore, and MODS.
- **Metadata, Administrative:** Metadata created for the purpose of the internal management of digital resources.
- **Metadata, Descriptive:** Metadata created for the purpose of identification, searching, and retrieval. It is the equivalent of cataloging for digital collections.
- **Metadata, Structural:** Metadata created for the purpose of describing relationships between different components of a digital object. It enables display and navigation.
- **Metadata, Technical:** Metadata created for the purpose of describing the attributes of a digital file.
- **Migration:** The practice of transferring digital content from one piece of hardware to another, typically to avoid damage or loss due to obsolescence.
- **Open Source:** Denotes software whose source code is available to the public for free. This term is often used in contrast to "Proprietary" software, whose source code is privately owned.
- **Physical Carrier:** The hardware used to store digital content. Examples include solid state drives, CD's and DVD's, DAT Tape, and spinning disk hard drives.
- **Quality Control:** A review intended to ensure that items and procedures meet predetermined standards.
- **Recovery:** The restoration of lost data from failed hardware.
- **Reformatting:** The act of digitizing an analog object into a digital object.
- **User Permissions:** The privileges given to users that allow them to conduct a number of operations effecting digital files. Permissions may include the ability to view, edit, move, or download content

Sources:
https://www.nps.gov/museum/publications/conserveogram/22-06.pdf
https://www2.archivists.org/glossary
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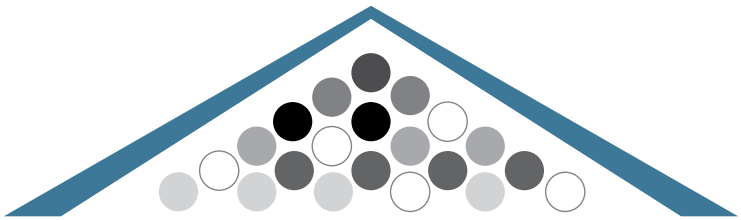

Digital Preservation Assessment

Building a Framework, Building a Community

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