

# Fundamentals of AV Preservation

CHAPTER 2

## INVENTORY AND ASSESSMENT

# PREFACE

NEDCC is pleased to offer the Fundamentals of AV Preservation textbook for self-study to anyone with internet access. An HTML version is available online at [www.nedcc.org/av-textbook](http://www.nedcc.org/av-textbook), and downloadable PDFs can be found at [www.nedcc.org/publications](http://www.nedcc.org/publications). Covering the core topics in caring for and reformatting audiovisual collections, this resource supports cultural heritage professionals in their efforts to steward audiovisual materials.

- Chapter 1: Care and Handling of Audiovisual Collections
- Chapter 2: Inventory and Assessment
- Chapter 3: Planning, Preparing, and Implementing Reformatting Projects
- Chapter 4: Managing Digital Audiovisual Collections
- Chapter 5: Disaster Preparedness and Response
- Glossary

## Credits

The content for each chapter of the Fundamentals of AV Preservation textbook was created in 2017 by staff members of AVPreserve (now AVP) and edited by NEDCC staff members. The textbook served as the foundation of a multi-session, instructor-facilitated online course launched by NEDCC in 2017. The development of the course and textbook were subsidized by the National Endowment for the Humanities, and in 2022, additional NEH funding supported the transformation of the HTML textbook into downloadable PDFs.

### AVPreserve — Authors

Chris Lacinak, *President (Ch. 1 & 3)*  
 Rebecca Chandler, *Consultant (Ch. 1 & 2)*  
 Amy Rudersdorf, *Senior Consultant (Ch. 4)*  
 Kara Van Mallsen, *Partner and Senior Consultant (Ch. 5)*

### NEDCC — Editors

Ann Marie Willer, *Director of Preservation Services*  
 Sean Ferguson, *Preservation Specialist*  
 Becky Geller, *Preservation Specialist*  
 Frances Harrell, *Senior Preservation Specialist*  
 Kim O’Leary, *Technology and Events Coordinator*  
 Danielle Spalenka, *Preservation Specialist*



NATIONAL  
 ENDOWMENT  
 FOR THE  
 HUMANITIES

# CONTENTS

i	<b>Preface</b>
ii	<b>Contents</b>
1	<b>Chapter 1: Care and Handling of Audiovisual Collections</b>
1	Care and Handling
2	Grooved Media
7	Magnetic Media
12	Film
15	Optical Media
17	Shipping of Media Carriers
18	Additional Resources
21	<b>Chapter 2: Inventory and Assessment</b>
21	Inventory
28	Selection for Digitization
29	Prioritization for Digitization
33	<b>Chapter 3: Planning, Preparing, and Implementing Reformatting Projects</b>
34	The Digitization Signal Path
35	The Request for Proposal (RFP) Process
36	Internal Project Planning
39	Drafting a Statement of Work
58	Post-Digitization
59	<b>Chapter 4: Managing Digital Audiovisual Collections</b>
60	Digital Preservation Concepts
63	Organizational Infrastructure
65	Storage Infrastructure
70	Active Management
74	Metadata
78	Planning for Obsolescence
80	Prioritization and Phasing
83	<b>Chapter 5: Disaster Preparedness and Response</b>
83	Disaster Prevention and Mitigation
87	Disaster Planning
90	First Response Steps
96	<b>Glossary</b>

## CHAPTER 2

## INVENTORY &amp; ASSESSMENT

*by Rebecca Chandler, Consultant, AVPreserve*

**O**RGANIZATIONS RANGING FROM MUSEUMS to government agencies maintain moving image and sound collections that are used daily for research, education, communication, and the fulfillment of institutional missions. Unfortunately, these collections are often inadequately documented and frequently inaccessible due to various resource constraints, difficulties in capturing relevant data from objects, and the effects of obsolescence and physical degradation.

The lack of intellectual control is a very real threat to the preservation of audiovisual materials. If an organization does not know what content and formats it has, it will not know how to plan or prioritize nor know what materials are most at-risk. Common practice across archives has been to drive preservation by patron request or internally identified priorities that fit under a particular budget allocation. However, such initiatives cannot be carried out without some basic knowledge of collection contents; without such insight, unidentified or unprocessed materials will sit on the shelf, not because the content is unimportant, but because it has been unfindable and inaccessible. As a steward for the assets in your care, you are responsible for making sure they are findable, accessible, and sustainable; this important work requires an accurate inventory.

An accurate inventory enables you to make informed decisions regarding your collections. It allows you to make smart choices around selection and prioritization for digitization. Creating an inventory will allow you to learn more about your collection and reveal a path forward to its preservation.

## SECTION 1: INVENTORY

A basic item-level inventory is vital to the successful stewardship of audiovisual assets. At a minimum, a unique identifier and a format-type must be identified and recorded for each asset in order to responsibly track items throughout their lives. However, gathering as much data as possible in one pass will provide a baseline set of information that will support selection, prioritization, and initial discovery, as well as minimize the number of times the assets need to be referenced and handled.

Establishing a minimal set of required fields will help to streamline the process and manage expectations. Minimal sets are meant to be used for basic identification, selection, prioritization, and digitization planning. Information beyond the required fields should only be recorded if it is easily discoverable by simply examining the physical asset or consulting an existing record. Further descriptive and technical information can be recorded post-digitization at your organization's discretion.

As archivists, we want to provide our users with as much information regarding our collection as possible; however, richer descriptions do not play a part in the inventory process. At this point, we want to record as much information as can be quickly and easily gleaned from the asset itself. There will be a time for more detailed description at a later point, should you and your institution decide that it is necessary. At this beginning stage, however, time is of the essence.

What follows is a list of suggested fields to capture in your inventory, along with a rationale for their capture. These fields are divided between ones that are so important as to be considered “required” and those that are optional but helpful. Ultimately, the decision of what fields to record lies with you and what is needed for your organization to be able to adequately plan for preservation.

## Required Fields

### UNIQUE ID

#### Description

A free text field for a unique number assigned to each asset. This number may be an existing ID number already associated with the asset or it may be created from scratch.

#### Rationale

Each asset must be assigned a unique ID in order to allow responsible stewardship throughout its life. Assigning a unique ID will make it easier for you to record an asset’s location for retrieval purposes and to track its process throughout the digitization process, especially when sending the asset to an outside digitization vendor.

#### Procedure

If the item has already been logged or cataloged in an existing system, a unique ID may already exist. If this is the case, simply capture this information in your new inventory. If a unique ID does not exist, you will have to create one. It could be an alphanumeric string that follows the IDs you use in other systems. Or you could make up a system yourself. In the absence of an existing system, you might work with something like “000001, 000002, 000003...,” with the number of leading zeros dependent on the estimated size of the collection. No matter what you choose, remain consistent and follow a system that will not allow accidental repeats of ID numbers.

If the unique ID is not indicated on the item itself, it is a good idea at this point in the process to add a barcode to the asset capturing this data. It will save time in the future when you move on to digitization projects, and it makes sense to do it now as you are handling the materials. Print

two of each unique ID—one for the asset case and one for the asset itself.

### LOCATION

#### Description

A free text field containing the asset’s location.

#### Rationale

Recording an asset’s location will allow you to locate it more easily whenever necessary.

#### Procedure

Once again, consistency is the goal. Creating a system for identifying locations that can be used across your collection will be most helpful to you in the future. If your collection is large and stretched across several buildings, start with a building code and then perhaps a room code. If your items are on shelves, perhaps a row/bay/shelf code would make sense next. If they are in boxes on shelves, add a box number. Here is an example:

#### **Reed:R102:04:B:3:842**

This item is located in the Reed Building, in Room 102, in row 4, bay B, on shelf 3, in box 842.

This is simply one approach among many. There is no wrong way to create location codes; think through what will work best for your institution and remain consistent.

### MEDIA TYPE

#### Description

A field that designates whether the record is for an audio, video, or film asset.

#### Rationale

Indicating the media type will allow you to organize and group like assets when planning for digitization.

#### Procedure

Media type can be determined by inspecting the physical item and goes hand in hand with identifying the format. Use a controlled vocabulary such as an internal list or

PBCore’s instantiationMedia Type list: [http://metadata.registry.org/concept/list/vocabulary\\_id/135.html](http://metadata.registry.org/concept/list/vocabulary_id/135.html).

## FORMAT

### Description

A field that indicates the specific type of audio, video, or film asset, such as “cylinder” or “VHS.”

### Rationale

Format will allow you to organize and group like assets when planning for digitization. In addition, knowing the types and quantities of formats in your collection will allow you to gather more accurate digitization cost estimates, making budgeting and fundraising easier.

### Procedure

You may have personal experience with many of the formats in your collection; however, some formats will likely be unfamiliar. Throughout its 150-year history, audiovisual recording has spanned well over 100 different formats, making format identification sometimes difficult. The following resources will help with format identification.

- National Archives and Records Administration, *How Do I Identify Audio Formats?*  
<https://www.archives.gov/preservation/formats/audio-identify-formats.html>
- National Archives and Records Administration, *How Do I Identify Video Formats?*  
<https://www.archives.gov/preservation/formats/video-identify-formats.html>
- National Archives and Records Administration, *How Do I Identify Motion Picture Film Formats?*  
<https://www.archives.gov/preservation/formats/motion-picture-film-identify-formats.html>
- Association of Recorded Sound Collections, *Guide for Audio Preservation, Chapter 2, Audio Formats: Characteristics and Deterioration*  
<https://www.clir.org/pubs/reports/pub164/pub164.pdf>

- Mona Jimenez and Liss Platt, *Videotape Identification and Assessment Guide*. Texas Commission on the Arts, 2004

<http://www.arts.texas.gov/wp-content/uploads/2012/04/video.pdf>

- Timothy Vitale and Paul Messier, *Video Format Identification Guide* on the *Video Preservation Website*, 2007  
[http://videopreservation.conservancy-us.org/vid\\_id/index.html](http://videopreservation.conservancy-us.org/vid_id/index.html)

- Film Preservation Guide, Chapter 2, *Understanding Film and How it Decays*  
[https://www.filmpreservation.org/userfiles/image/PDFs/fpg\\_2.pdf](https://www.filmpreservation.org/userfiles/image/PDFs/fpg_2.pdf)

- Preservation Self-Assessment Program, *Collection ID Guide*  
<https://psap.library.illinois.edu/collection-id-guide>

Once you’ve identified the format, record it in your inventory. You may also fill in the Media Type once identification has been accomplished. Use a controlled vocabulary, such as an internal list or PBCore’s instantiationPhysical list: [http://metadata.registry.org/concept/list/vocabulary\\_id/145.html](http://metadata.registry.org/concept/list/vocabulary_id/145.html).

## TITLE

### Description

A free text field containing the title of the asset.

### Rationale

Depending on the level of description your items have associated with them from earlier cataloging efforts, the title is often your best clue about the content. The title will likely play a role in the prioritization of your assets for digitization in the future.

### Procedure

If a catalog record already exists, take the title from there. If a record does not exist, make your best guess as to the title based on whatever is on the asset itself. This may consist of a professionally printed label where the title is clear or a handwritten label where some guessing is necessary. If no label exists, simply title the asset “untitled” or “unknown.”

## Optional fields

### COLLECTION NAME

#### Description

A field denoting the asset's parent collection, if any.

#### Rationale

If your institution has many collections, it will be helpful to have the parent collection recorded. This will allow you to group items by intellectual content, which will assist with prioritization.

#### Procedure

Collection names are often recorded on boxes or other containers. Or perhaps your assets are grouped by collection in a particular location. Collection names can be difficult to assign to audiovisual materials as they are often part of institutional knowledge and not necessarily recorded or easily interpreted. Use a controlled vocabulary based on the collection names already in use at your institution.

### DESCRIPTION

#### Description

A free text field for any contextual information recorded on the asset or its container or gleaned from other sources such as donor agreements.

#### Rationale

Recording as much easily-discernible data as possible while you are handling your assets is a smart strategy. Recording any printed or written information that is on the asset now will save you time later.

#### Procedure

Record any printed or written information on the asset that does not fall into one of the other fields listed here. Use a separator, such as a semicolon, to separate different lines or ideas.

### DATE

#### Description

A field noting the date the asset itself was created.

#### Rationale

The age of an asset can be helpful in determining its risk of degradation and therefore prioritization.

#### Procedure

Date can be a tricky data point to determine as there can be multiple dates associated with one asset. One tape could have been used to record on multiple days. A tape could have been a duplicate of another asset, meaning it was created on one date, but the content is from another date. Do your best to record the date that makes the most sense to you and record any additional dates in the Description field.<sup>9</sup> Use a consistent date format, such as yyyy-mm-dd.

### GENERATION

#### Description

A field that defines the relationship between original material and copies.

#### Rationale

The Generation field will allow you to identify duplicates in your collection and will aid in prioritization.

#### Procedure

Before an asset is reformatted, its generation can be determined only by using the label information present on the object. Unfortunately, there is no other way to determine an asset's generation. Your organization should compile a list of relevant generations (e.g., Production Master, Access Copy, Sub-Master, Dub, etc.) and use that controlled vocabulary or use PBCore's instantiation-Generations list: [http://metadataregistry.org/concept/list/page/1/vocabulary\\_id/147.html](http://metadataregistry.org/concept/list/page/1/vocabulary_id/147.html).

<sup>9</sup> Should your collection be one where it makes sense to record multiple dates for each asset, you may wish to explore PBCore for further guidance on date fields: <http://pbcore.org>. The instantiationDate element may prove useful: <http://pbcore.org/pbcoreinstantiation/instantiationdate>.

**PART****Description**

A free text field that notes if the asset is a piece of a larger work. For example, if a full-length film is broken up into four reels, you might complete this field as “Reel 1 of 4.”

**Rationale**

Part is helpful in determining if your institution holds the entirety of a particular work, and it will allow you to keep parts grouped together when prioritizing for digitization.

**Procedure**

Like Generation, Part can only be determined by the asset’s label information.

**COMMERCIAL OR UNIQUE/RARE****Description**

A field indicating if an asset is commercial or unique in nature.

**Rationale**

This field is extremely important in prioritization. See “Section 3.2: Content Value” below for more information on prioritization.

**Procedure**

Usually, identifying whether or not an asset is a commercially released item is fairly straightforward. Is it in a professionally produced package? Is there a recording label or production studio listed on the label? Is there a barcode printed on the label or a matrix number? If yes, then it’s a commercial item.

Assets with handwritten labels can usually be assumed to be unique. The exception to this would be if it is a home copy of a commercially released recording (think of recording songs off the radio onto cassette). Do your best to identify whether assets are commercial or unique; when in doubt, assume they are unique.

Identifying commercially released records that are rare (e.g., short runs, out of print) is a bit trickier and will require

subject expertise or research. You will have to determine if this is a priority for your organization. Use a controlled vocabulary of consistent internal terms.

**COPYRIGHT/RESTRICTIONS****Description**

A free text field that explains the terms defining an asset’s availability for re-use.

**Rationale**

Restrictions on making an asset freely available to the public will play a role in prioritization.

**Procedure**

Restrictions on usage may be recorded in an existing catalog record or in an asset’s donor agreement. Record any information you have on copyright status and restrictions here. If no information is known regarding an asset’s status, record that as well.

**CONDITION****Description**

A field recording the physical condition of the object.

**Rationale**

Assets suffering from irreversible degradation may be prioritized for digitization. Some methods of degradation can be contagious; infected assets should be quarantined.

**Procedure**

Some modes of degradation are easily identifiable just by inspecting an asset, and these modes are the ones we wish to record here. Deep knowledge of recording formats and their chemistry is not required, just an observant eye. For more information, review “Chapter 1: Introduction to AV Preservation Challenges.” Here are some red flags to look out for:

- **Mold:** Mold can affect any format in your collection. Keep an eye out for fuzzy or speckled debris. Active mold may spread and will continue to degrade your assets. It is best to quarantine any assets infected with mold.



- **Odor:** Odd smells are indicative of some sort of chemical reaction and may indicate that an asset is actively degrading. Film that smells specifically of vinegar should be quarantined from other film.
- **Broken or cracked discs or cylinders:** Depending on the break, this may make them unplayable by traditional means.
- **Palmitic acid:** A white, oily sheen on discs indicates they are in the early stages of delamination. Once delamination begins, the lacquer will crack and flake off, rendering the disc unplayable.
- **Crazing:** The next step in delamination of discs. A network of fine cracks manifests on the discs. Once the lacquer flakes off, the disc will not be playable.
- **Long play tapes:** Long play tapes are less of a condition issue and more of a reality of the original format. They are thinner than tapes of shorter durations and are therefore prone to stretching or snapping on playback.
- **Broken carriers:** Cracked cassette cases, broken reels, etc.
- **Unspooled tape:** The tape is off of its reel or out of its cassette, possibly crumpled and tangled. This will lead to mechanical problems on playback and potentially a loss of content.
- **Spoking:** Spoking is most easily identified on open reel tape and film (Image 2.1). As magnetic tape or film shrinks, the tension in the reel builds, forcing the tape/film to “bend” in a regular pattern to help relieve that tension. These assets may require some preservation work prior to digitization or the use of specialized equipment.

This field can be either free text or a controlled vocabulary.

For more information on condition issues affecting audiovisual materials, visit the following resources:

- FACET: The Field Audio Collection Evaluation Tool, Format Characteristics and Preservation Problems Version 1.0  
[http://www.dlib.indiana.edu/projects/sounddirections/facet/facet\\_formats.pdf](http://www.dlib.indiana.edu/projects/sounddirections/facet/facet_formats.pdf)

### IMAGE 2.1

**Physical condition: A film reel that exhibits signs of spoking.**

Credit: AVP



- Association of Recorded Sound Collections, *Guide for Audio Preservation, Chapter 2, Audio Formats: Characteristics and Deterioration*  
<https://www.clir.org/pubs/reports/pub164/pub164.pdf>
- Film Preservation Guide, Chapter 2, Section 2.6, *Common Types of Decay and Damage*  
[https://www.filmpreservation.org/userfiles/image/PDFs/fpg\\_2.pdf](https://www.filmpreservation.org/userfiles/image/PDFs/fpg_2.pdf)

### Inventory Tools

How do you best capture this item level information? Determine whether your institution has any internal tools or catalog systems and if they will work for your audiovisual materials. If the answer is no on either count, here are some free, open source options that may work for you.

### AVCC

AVCC is an abbreviation for AudioVisual Collaborative Cataloging, which is a free, open source web application developed by AVPreserve and funded by Library of Congress, METRO, and AVPreserve. AVCC was developed to enable collaborative, efficient item-level cataloging of audiovisual collections. The application incorporates built-in reporting on collection statistics, digital storage calculations, shipping manifests, and other data critical to prioritizing

and planning preservation work with audiovisual materials.

AVCC establishes a minimal set of required and recommended fields that provide basic intellectual control enabling quantification, planning, and management of collections. The focus of AVCC is two-fold: to uncover hidden collections via record creation and to support preservation reformatting in order to enable access to the content itself. For more information, visit <https://www.avpreserve.com/tools/avcc>.

### PSAP

The Preservation Self-Assessment Program, or PSAP, is a free online tool developed by the University of Illinois at Urbana-Champaign. PSAP was developed to help collection managers prioritize efforts to improve the conditions of their collections. Meant for institutions with few-to-no preservation or conservation staff, PSAP is designed to be simple and easy to use for those with little preservation training.

PSAP aims to:

- Support targeted preservation assessments of paper documents, books and bound items, photographic and image materials, audiovisual materials, and non-composite museum objects made of ceramic, glass, stone, or metal.
- Perform item- and collection-level assessments.
- Provide textual and image-based educational resources to aid in the identification of different types of materials and their preservation challenges.
- Address factors of storage and display, applicable to situations from open exhibitions to closed archives.

For more information, visit <https://psap.library.illinois.edu>.

### AV COMPASS

AV Compass is a free, online suite of tools developed by the Bay Area Video Coalition with support from the Andrew W. Mellon Foundation. Intended for use by individuals and organizations alike, AV Compass features step-by-step educational videos, PDF guides, and a tool for creating inventories.

AV Compass includes:

- Instructional guides and eleven short videos that walk a user through the assessment.
- Overview of preservation concepts.
- Directions on how create and implement a preservation plan.
- A free tool to create an inventory of your collection, which you can export and send to collecting archives and preservationists.

For more information, visit <http://www.avcompass.bavc.org>.

### SPREADSHEETS

Spreadsheets are a perfectly adequate option for creating an item-level inventory for some institutions. They are familiar to most staff and easy to use. Simply add whichever fields you plan to populate during your inventory and get started. Be sure to create and use controlled vocabularies where applicable—consistency is key.

## SECTION 2: SELECTION FOR DIGITIZATION

### The Mission Statement as a Guide

The process of selecting assets for digitization will be much more efficient and precise if you approach the issue with your mission statement in mind. Your archive should have a mission statement, approved by the head(s) of your organization. This statement should define the authority of the archivist within the organization and the parameters of the archival program.<sup>10</sup> It is these parameters that will influence your decisions with regards to the selection of audiovisual materials for digitization.

Some questions to consider when selecting items for digitization include:

- Do you serve a specific audience's needs?
- What materials will be most useful to that audience?
- Is there a record management lifecycle in place at your organization?

Do you need to worry about destroying certain materials?

Assets that don't fit within the archive's mandate set forth by your organization may not be considered preservation-worthy. Some assets may even need to be destroyed according to existing record retention policies. Referring back to your mission statement and associated policies will help you determine which assets are likely candidates for digitization.

Don't have a mission statement? Write one! Operating your archive without a mission statement puts the health of your archive in jeopardy. A strong mission statement informs your audience about the principles on which you base your existence, justifies your work to governing bodies, and provides a clear direction for your decision-making.

### Goals for the Collection

Closely related to the mission statement, any specific goals you have in mind for your archive will come into play when selecting items for digitization. Are there any initiatives you are hoping to launch in the future? Are there items in your collection that align with those initiatives? The selection process will be much more effective and useful if you are thinking about your mission, your goals, and what you need to meet those goals both in the short term and in the long term.

### Selection of Best Copy

Archives commonly have multiple versions of the same content. This could be the result of previous preservation reformatting efforts or could be due to production processes.

### LEGACY PRESERVATION AND VIEWING COPIES

These duplicates will be identical copies of original audiovisual materials either on the same format or a newer format. It has been common practice to make "viewing" copies of archival materials in order to lessen the wear and tear on the original when screening items for patrons. Or, in an effort to battle obsolescence, content would be migrated to a newer format (e.g., 1 inch open reel videotape to Betacam). No matter the motivation, these copies will almost always be inferior to the original. The exception will be if the original has become so far degraded over time that the newer copy becomes the only viable means of transferring the content. The identification of "best copy," or the best copy of an asset currently in existence, will be important in the preservation of collections like this.

### PRODUCTION PROCESSES

If your organization holds any production-oriented collections in its holdings, chances are you will have a combination of production elements (i.e., working copies and component parts that went into creating the final edited master) as well as final edited masters. You could even have several different "final" versions of a work. This would be a good

<sup>10</sup> See SAA's "Museum Archives Guidelines" for an adaptable example. <https://www2.archivists.org/groups/museum-archives-section/museum-archives-guidelines>.

time to reference your mission statement and goals. Most archives find that the final edited masters will be of greatest interest and value to their organization and patrons; there will not be strong use cases for maintaining or digitizing the production elements.

However, some archives do have use cases for maintaining and digitizing all production elements in their holdings. These archives might be affiliated with an active production studio that may wish to maintain the option of using archival footage in reissues or new work. Or, these archives may be part of an educational institution to which the process of creating audiovisual media is of great interest and importance to its students and faculty. Whatever the case, if this is your mission, you must plan to digitize and preserve all production elements in your collection in addition to final edited masters.

### SELECTING BEST COPIES WITHIN A BUDGET

If you find yourself in one of the scenarios outlined above and you are able to weed certain items from your collections (whether they are viewing copies or production elements), then your long term burden of preservation has been lightened, potentially significantly. However, the identification of best copies, elements, and final master copies for deselection and selection will require investigation and resources. Materials will need to be viewed and comparisons made in order to determine which copy is now the best quality copy. This may either be handled internally or through a vendor. If performed internally, you will need to procure the appropriate equipment, supplies, and staffing to screen your assets. If performed through a vendor, materials should be grouped by production title prior to sending to a vendor for selection of best copy.

In an ideal world, we would be able to view each asset and make an informed decision as to which copy is the best quality and which version we wish to digitize for preservation. However, whether you do this in-house or with a vendor, it will add to the cost of your digitization project. Rather than viewing or listening to each asset, your budget may require you to make some assumptions regarding best copy. For example, it is usually a good choice to select the original master for preservation, as any copies made in the past will be of inferior quality. The reality is that in some cases, the original master will be more degraded than a copy, which is why we wish we could

watch each asset to make a decision. Making an assumption is the only way some of us will be able to afford to preserve the assets we have in our collections; just make sure you think through the possible scenarios and make a well-informed decision. You can choose to select a few items that are of extreme importance to your organization for analysis by a vendor to select best copy.

## SECTION 3: PRIORITIZATION FOR DIGITIZATION

After you decide which of your audiovisual assets must be digitized, you must prioritize them. Chances are you may not have the budget, resources, or staffing required to digitize all of your assets at once. Therefore, having a planned order and timeline in mind will be helpful for planning purposes. There are four main issues to address when prioritizing items for digitization: technical needs, cost to digitize, content value, and use value. These will be discussed in the following subsections.

### Technical Needs

Physical audiovisual materials face multiple risk factors that render them partly or completely inaccessible in a relatively short period of time. As discussed in Chapter 1, plastics, metals, dyes, and other chemical materials are inherently unstable and reactive to their environment. The triggers and timeline for chemical degradation vary from format to format as the chemical makeup varies.

In addition, the technological dependencies of audiovisual materials limit the time that materials are accessible. Throughout its 150 year history, audiovisual recording has spanned well over 100 different formats. The majority of these formats are not interoperable and rely on their own proprietary technology for playback. Once a manufacturer discontinues production of a given format, obsolescence begins, leading to the loss of expertise, parts, equipment, and documentation and eventually resulting in inaccessibility of content. Age is not the only factor in obsolescence. Sometimes formats are very long-lived, such as VHS or LP, or they are extremely short-lived, such as MII or DAT. Long-lived formats will stave off obsolescence longer than short-lived ones, but all physical audiovisual formats are at risk of becoming obsolete.

## MEDIASCORE

In 2015, Indiana University developed and released an application called MediaSCORE,<sup>11</sup> which enables a detailed analysis of degradation and obsolescence risk factors for most physical audio and video formats. In order to function properly as a prioritization tool, MediaSCORE's developers created a prioritization scoring system based, in part, on a format's risk of obsolescence and degradation. Higher scores indicate a higher level of risk. Lower scores indicate a lower level of risk. Should you choose to use MediaSCORE as a prioritization tool, you will have the opportunity to enter a wide variety of item specific factors, including age, brand, and condition, all of which will have an effect on an item's level of risk. However, using even the base score alone provides you with a great start on prioritizing your items based on technical needs.

The following list of audiovisual assets ranked by technical risk was created by considering the format's MediaSCORE base score as well as professional experience of practitioners in the field.

A few notes on the preceding ranking:

- This list only considers each format's general level of obsolescence and degradation; it should not be the only factor you use in your institution for prioritization. Content value, use value, and cost to digitize, as well as any item-specific preservation problems will need to be considered as well.<sup>12</sup>
- This is not a comprehensive list of audiovisual formats. Should you encounter a format in your collection that is not on this list, it was most likely not a widely used format and is likely obsolete. You should rank it higher (i.e. with a lower number) on this list.

Film is ranked lowest on this list as numbers 39, 40, 41, and 42. Film is on a different degradation and obsolescence trajectory than audio and video formats. If stored under proper conditions,<sup>13</sup> it will remain viable for years to come. If film is not stored under proper conditions, it should be moved higher in the ranking.

**TABLE 2.1**

**Prioritization of audiovisual formats based on technical needs**

Rank	Format
1	2-inch open reel video
2	Lacquer disc
3	½-inch open reel video
4	MII
5	D1, D3
6	U-matic
7	PCM 1600, 1610, 1630 (U-matic)
8	DAT (DDS)
9	PCM-F1 (VHS, Betamax)
10	D2
11	1 inch open reel video
12	8mm family (video)
13	DTRS/DA-88 (Hi-8)
14	ADAT (VHS)
15	MiniDisc
16	Betamax
17	DV family
18	VHS, S-VHS, VHS-C
19	DVCPRO
20	Cylinder
21	Metal disc
22	Wire reel
23	¼-inch open reel audio
24	Microcassette, minicassette
25	Compact cassette
26	8-track
27	Betacam, BetacamSP, BetacamSX
28	Digital Betacam
29	D5
30	HDCAM
31	XDCAM
32	Laser disc
33	CD, CD-R, CD-RW
34	DVD, DVD-R, DVD-RW
35	Pressed 78 rpm disc
36	Pressed 45 rpm disc
37	Blu-ray
38	Pressed LP disc
39	Color acetate film
40	Black and white acetate film
41	Color polyester film
42	Black and white polyester film

<sup>11</sup> <https://github.com/IUMDPI/MediaSCORE>

<sup>12</sup> See "Chapter 1: Care and Handling" for item-specific preservation problems.

<sup>13</sup> See Chapter 1, "Sections 4: Film" and "Section 8: Additional Resources" for more information about storing film.

## Content Value

An assessment of an asset's content value will help you prioritize based on the historical or research importance of the content. Due to budget and timeline constraints, you will probably not be able to digitize everything in your collections before it is no longer viable; therefore, it makes sense to prioritize based on the value of an asset's content. In many cases, content-based advocacy catches an administrator's or donor's attention more than technical needs. However, a prioritization plan should consider both.

Answers to the following questions will help you to prioritize based on content:

- Is this commercial/published or unique/rare content?
- Is this content currently under copyright that restricts availability and re-use?
- Is this duplicate content of other items in the collection?
- What role does this play in the collection's origin and in the current research value of the collection? (e.g., Is it production material of less value than the final master?)
- What is your archive's role in custodianship (e.g., long-term preservation or access only)?

Based on these questions, unless content value dictates otherwise, a content-oriented prioritization scheme would be outlined as:

1. Prioritize unique/rare recordings over commercial/published recordings.
2. Prioritize recordings not under copyright over those under copyright.
3. Commercial/published works should be digitized if they are considered to be of continuing research value to the collection. These items may be digitized at a lower resolution if it is determined that:
  - a. other institutions or original rights holders are also caring for them,
  - b. the content is easily replaceable through other means, or

- c. there is limited value in long-term preservation, but there is more immediate value in exhibition or educational use.

Exact or lower quality duplicates, such as published materials or dubs from a master source, should not be digitized. Duplicate content derived from production processes should be prioritized for digitization based upon the research priorities of the collection.

## Use Value

This consideration will be driven primarily by research requests or in support of your institution's activities such as events, educational use, and web publication. As such, it should be a more strategic consideration used to promote the work of your institution and the depth of its collections. Essentially, use value considers how the content of an asset relates back to the mission of your institution. Here, you will want to ask yourself the following questions:

- Does this content support my mission?
- Does the content fit within my collecting policy?
- Does this content serve my core audience?

If you answered yes to these questions, then you should treat that asset as a high priority.

## Cost to Digitize

Based on the various technical issues discussed in "Section 3.1: Technical Needs," different formats will cost different amounts to digitize. This could be due to the scarcity of playback machines or the rate of chemical degradation of the object. No matter the reason, the result is that it is vastly more costly to digitize one format versus another. For example, digitizing a 2 inch open reel videotape can cost as much as ten times the amount of digitizing a compact cassette.

You will have to take into account all factors—technical issues, content, use value, and cost—to decide if it makes more sense to digitize one 2-inch open reel videotape or 10 compact cassettes. There is no right or wrong answer here, as long as you think through all the factors and decide what is best for your institution.

## Finding a Balance

Prioritization of your institution's assets for digitization requires a careful balance of technical needs, content value, use value, and cost. No one area should necessarily dominate your decision making process.<sup>14</sup> How each area is weighed will be unique to your institution. Hold discussions with interested stakeholders to determine a course of action that is right for your institution and collections. That being said, in some ways technical needs are still paramount. The reality is that not all of the audiovisual assets in your collection will be viable more than 10 years from now. If there is a chance you will wish to preserve the content of certain formats, regardless of the value of the content, then it is a good idea to digitize those sooner rather than later.

## CONCLUSION

The inventory and assessment of collections is a critical process that will have a lasting impact on an audiovisual media collection at every subsequent stage of reformatting and preservation planning. When creating an inventory, the entry of the required fields: Unique ID, Location, Media Type, Format, and Title will provide an institution with the basic level of knowledge needed to determine which of its materials need to be reformatted first. Optional fields such as Collection Name, Generation, Description, and Condition, among others in this chapter, will further enhance an institution's decision-making abilities.

There are helpful tools that can streamline the inventory process, ranging from third party software that is selected and downloaded online to spreadsheets that come installed on nearly every computer. Whatever the chosen tool, once the information is gathered, a repository must make careful choices when selecting materials for digitization. These decisions should take into account the institution's mission statement, the materials' content value, and the technical needs of the collection. As discussed in Section 3, the application MediaSCORE can help make these technical needs clear.

The inventory and assessment of audiovisual media underpins and supports all future projects for the collections, making the time spent reviewing and describing your materials worthwhile. In the long term, these steps will help you develop metadata for digital audiovisual collections, which makes conducting effective salvage efforts easier. In the short term, an institution will be prepared to draft a Statement of Work and submit a Request for Proposal to a vendor while applying resources efficiently. These are the key components of pursuing a reformatting project and are discussed further in "Chapter 3: Planning, Preparing, and Implementing Reformatting Projects."

<sup>14</sup> Unless "digitize everything" is something you can afford to do, in which case you should prioritize based on technical needs.

# GLOSSARY

**Active management:** The performance of consistent and ongoing digital preservation activities (e.g. fixity and validation) to ensure a digital file's continued access for as long as necessary.

**Artifact:** Anomalies during visual or aural representations of recordings.

**Audit trail:** The information associated with a digital file that tracks the transactional history of it from the point of capture or ingest to know whether it has been managed without change to the bits that make it up and according to relevant policies and standards.

**Authenticity:** The quality of being genuine and free from tampering and is typically inferred from internal and external evidence, including its physical characteristics, structure, content, and context.<sup>50</sup> Trustworthiness.

**Back coat:** Layer added to some magnetic tape to help support the magnetic recording layer. The back coat reduces tape friction, dissipates static charge, and reduces tape distortion.

**Binder system:** System through which magnetic particles are held by a binder to a substrate layer.

**Bit rot:** The corruption, loss, or decay of bits, the building blocks of digital files.

**Carrier type:** Refers to the physical carrier of the AV material. Examples of carrier type include reels and cassettes.

**Checksums:** Alphanumeric strings that reflect the uniqueness of every digital file.

**Curation:** The activities that are performed on a digital file throughout its lifecycle, including selection and appraisal, description, ongoing care and management, long-term access, and/or deaccessioning/disposal.

**Degradation:** The process in which the quality or integrity of an object is destroyed over time.

**Delamination:** In disc media, the process that causes layers to separate from the support base.

**Digital preservation:** The active management of digital content over time to ensure ongoing access.<sup>51</sup> It is an integral part of curation (see definition above).

**Digitization:** The representation of an object, image, sound, moving image, or document by generating a series of numbers that describe a discrete set of its points.

**File attendance:** Ensuring that there are no missing or unexpectedly present files in a given location.

**Fixity:** File fixity refers to the property of a digital file being fixed, or unchanged. Fixity checking is the process of verifying that a digital object has not been altered or corrupted.<sup>52</sup>

**Governance:** In the informational sense, governance is the set of structures, policies, procedures, processes, and controls implemented to manage information at an enterprise level, supporting an organization's immediate and future regulatory, legal, risk, environmental and operational requirements.<sup>53</sup>

50 "Authenticity." Glossary of Archival and Records Terminology. Society of American Archivists. <http://www2.archivists.org/glossary/terms/a/authenticity>

51 "About." Digital Preservation. Library of Congress. <http://www.digitalpreservation.gov/about>

52 Wikipedia. File Fixity. [https://en.wikipedia.org/wiki/File\\_Fixity](https://en.wikipedia.org/wiki/File_Fixity). Accessed December 29, 2016.

53 Wikipedia. Information governance. [https://en.wikipedia.org/wiki/Information\\_governance](https://en.wikipedia.org/wiki/Information_governance)



**Ingest:** The process by which digital files and their associated metadata (called a Submission Information Package, or SIP) is deposited or submitted into a digital repository.

**Latency:** In computer networking, latency is the time interval between the request for information, such as a digital file, and the retrieval or display of that file to the user by the system.

**Machine transport:** Playback equipment.

**Mandrel:** A cylindrical rod placed through a cylinder and used to rotate it for playback.

**Media type:** AV materials are classified as audio, video, or film during the cataloging and inventory processes.

**Metal evaporated tape process:** Process in which magnetic particles are vaporized from a solid and deposited onto a substrate layer.

**Migration:** Converting from one format to another format considered to be of greater stability.

**Obsolescence:** The state of being which occurs when an object or practice is no longer wanted or used. Usually occurs when a new technology supersedes the old.

**Preservation planning:** A process by which the general and specific needs for the care of collections are determined, priorities are established, and resources for implementation are identified.

**Refreshing:** Copying information content from one storage media to the same storage media.<sup>54</sup>

**Reproduction method:** Method in which a recorded signal is played back from a physical media object.

**Risk management:** The systematic control of losses or damages, including the analysis of threats, implementation of measures to minimize such risks, and implementing recovery programs.<sup>55</sup>

**RPM:** Rotations per minute. Used to indicate recording speed for discs and cylinders.

**Sidecar file:** A file that is stored next to the AV file in the same directory.

**Signal path:** The route that an audio signal travels from source to output. This may be within a single device (CD to speaker within a stereo system) or within a workflow (original audio recording to reformatted digital file).

**Slipping:** Tape pack problem in which either single strands or groups of strands are misaligned and migrate to rest against the edge of the flange. May cause edge damage to the tape or film.

**Splice:** When two ends of a tape or film are joined together using specially formulated splicing tape.

**Sticky shed syndrome:** A condition resulting from the deterioration of the binder in magnetic tape that results in gummy residues on tape heads during playback.<sup>56</sup>

**Storage architecture:** The computing and network infrastructure required to store digital files.

**Storage capacity:** The amount of data a storage device can hold, often measured in gigabytes (GB), terabytes (TB), and petabytes (PB).

**Storage media:** Devices on which data is stored. These include computer hard disks, optical disk drives, USB drives and other external hard drives, DVDs, and magnetic data storage tapes.

**Stylus:** A hard point following a groove in a phonograph record and transmitting the recorded sound for reproduction.

**Substrate:** The backing film needed to support the magnetic recording layer of a magnetic tape.

**Tails out:** A method for winding tape onto a reel where the end of the tape is on the outside.

54 Digital Preservation Coalition Digital Preservation Handbook Glossary <https://dpconline.org/handbook/glossary#R>

55 "Risk Management." Glossary of Archival and Records Terminology. Society of American Archivists. <https://www2.archivists.org/glossary/terms/r/risk-management>

56 "Sticky Shed Syndrome." Glossary of Archival and Records Terminology. Society of American Archivists. <https://www2.archivists.org/glossary/terms/s/sticky-shed-syndrome>

