VHS Digitization: Best Practices and Training

Indigitization Futures Forum June 2016

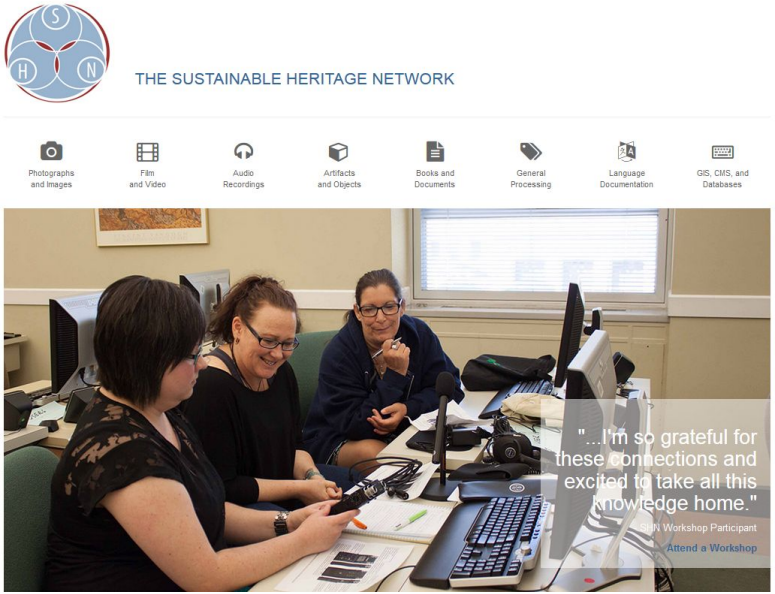
Lotus Norton-Wisla, Michael Wynne, Maria Montenegro

Agenda

- 1:00-1:30 **Intros, Sustainable Heritage Network overview**
- 1:30-2:00 **Intro to Video: Quality, File sizes and types, Considerations**
- 2:00-2:30 **Video Project Planning Discussion**
- 2:30-3:15 **Digitizing VHS: Care and Handling, Demonstrations, Hands-on practice, Editing discussion**
- 3:15-3:45 **Planning Digitization Projects**
- 3:45-4:00 **Evaluations and questions**

Sustainable Heritage Network

What is the SHN?



The Sustainable Heritage Network (SHN) is a collaborative initiative and online platform that provides individuals, communities, and institutions with tools and online resources dedicated to the preservation, digitization, and management of cultural heritage and traditional knowledge.

TALM's digitization needs:

- Digital preservation strategies aimed specifically at TALMs
- Hands-on, topic specific, short courses
- Online tutorials and resources

SUSTAINING
INDIGENOUS CULTURE:

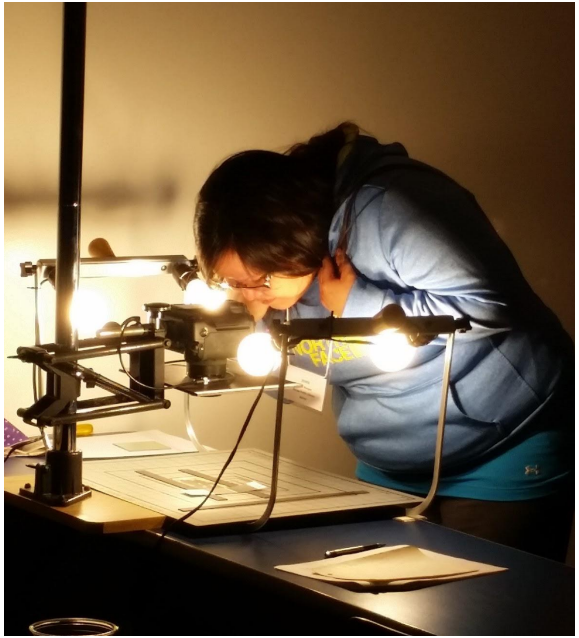
THE STRUCTURE, ACTIVITIES, AND NEEDS
OF TRIBAL ARCHIVES, LIBRARIES, AND MUSEUMS

2012

This report is based on a national needs assessment survey conducted by the **Association of Tribal Archives, Libraries, and Museums,** with funding from the **Institute of Museum and Library Services** and the **Oklahoma Department of Libraries.**

Report Author: **Miriam Jorgensen,** Research Director for the **Harvard Project on American Indian Economic Development** and its sister program, the **Native Nations Institute at the University of Arizona.**

ATALM
Association of Tribal Archives, Libraries, & Museums



ANLA
Alaska Native Language Archive

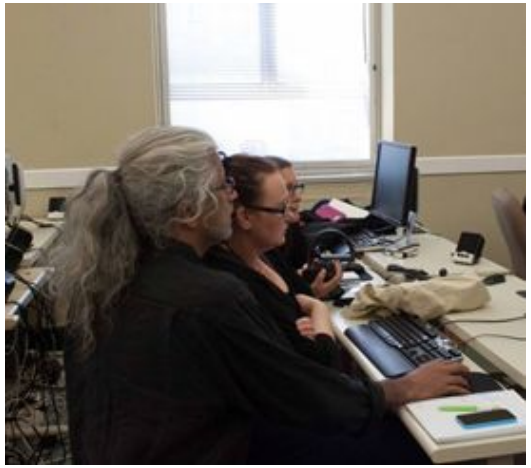
hands-on workshops

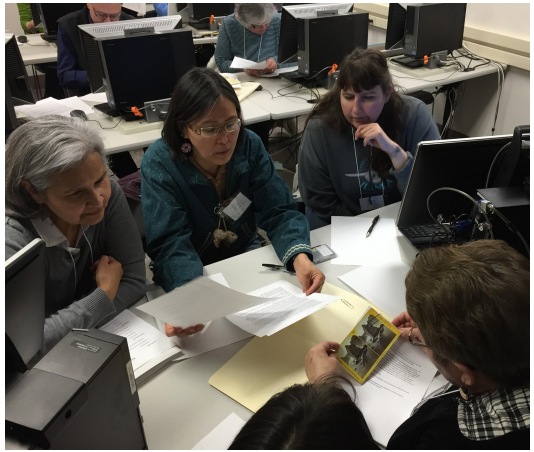
online resources

communities and workbenches

SHN WORKSHOPS

- Regional and national events.
- Hands-on, targeted training.
- Topics on digital preservation.
- Materials are shared through the SHN website.

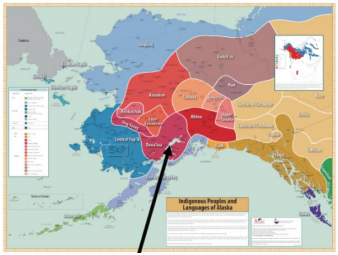




2015 Post-ATALM Sustainable Heritage Network Workshop

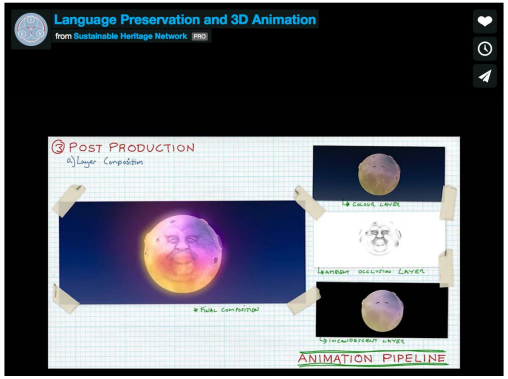
Community: Collaborative Stewardship
Category: Showcase, Workshop

Dena'ina Language Revitalization



Copystand Equipment and Setup [Tutorial]

Language Preservation and 3D Animations



Basic Oral History Kit

ONLINE RESOURCES

Our resources can be browsed by:

- CATEGORIES
- COLLECTIONS
- MEDIA TYPE
- SHN WORKSHOP
- KEYWORDS
- SHN COMMUNITIES

SHN COMMUNITIES

Institutions or groups of people who share and manage content based on their cultural protocols.

Convening Great Lakes Culture Keepers

Deebege Newe

Digital POWRR Project

Editing Modernism in Canada

Endangered Languages Archive, SOAS University of London

Gina Minks Consulting, LLC

Indigitization

Little Big Horn College Library

Moving Image Preservation of Puget Sound MIPoPS

Multnomah County Archives

NEDCC

Northwest Archivists Native American Collections Roundtable

SHN WORKBENCHES

Institutions offering digital services and training at physical locations.

Indigitization [Workbench]

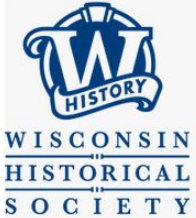
Agua Caliente Cultural Museum [Workbench]

Western Libraries, Heritage Resources [Workbench]

Culture and Heritage Department [Workbench]

Conservation Center for Art & Historic Artifacts [Workbench]

Multnomah County Archives [Workbench]



Wisconsin Historical Society [Workbench]

Oregon State University Libraries [Workbench]

NEDCC [Workbench]

Sequoyah National Research Center [Workbench]

Denver Museum of Nature & Science [Workbench]

Union of BC Indian Chiefs Resource Centre [Workbench]

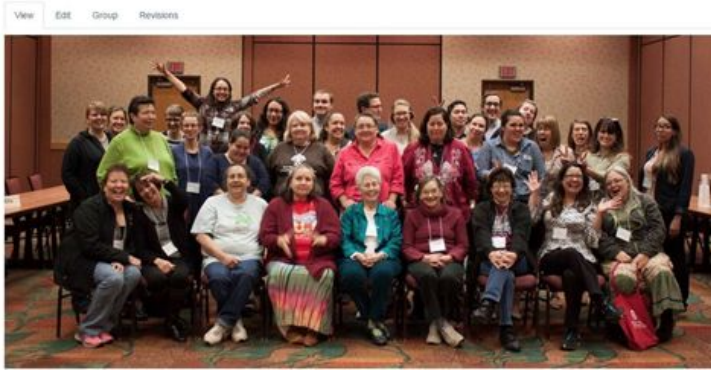
Become a SHN member

Get in touch!

sustainableheritagenetwork.org

support@sustainableheritagenetwork.org

Convening Great Lakes Culture Keepers



Become a SHN Community

Become a SHN Workbench

Digital Video Considerations

- File Size and Quality
- File Formats
- Digitizing Options

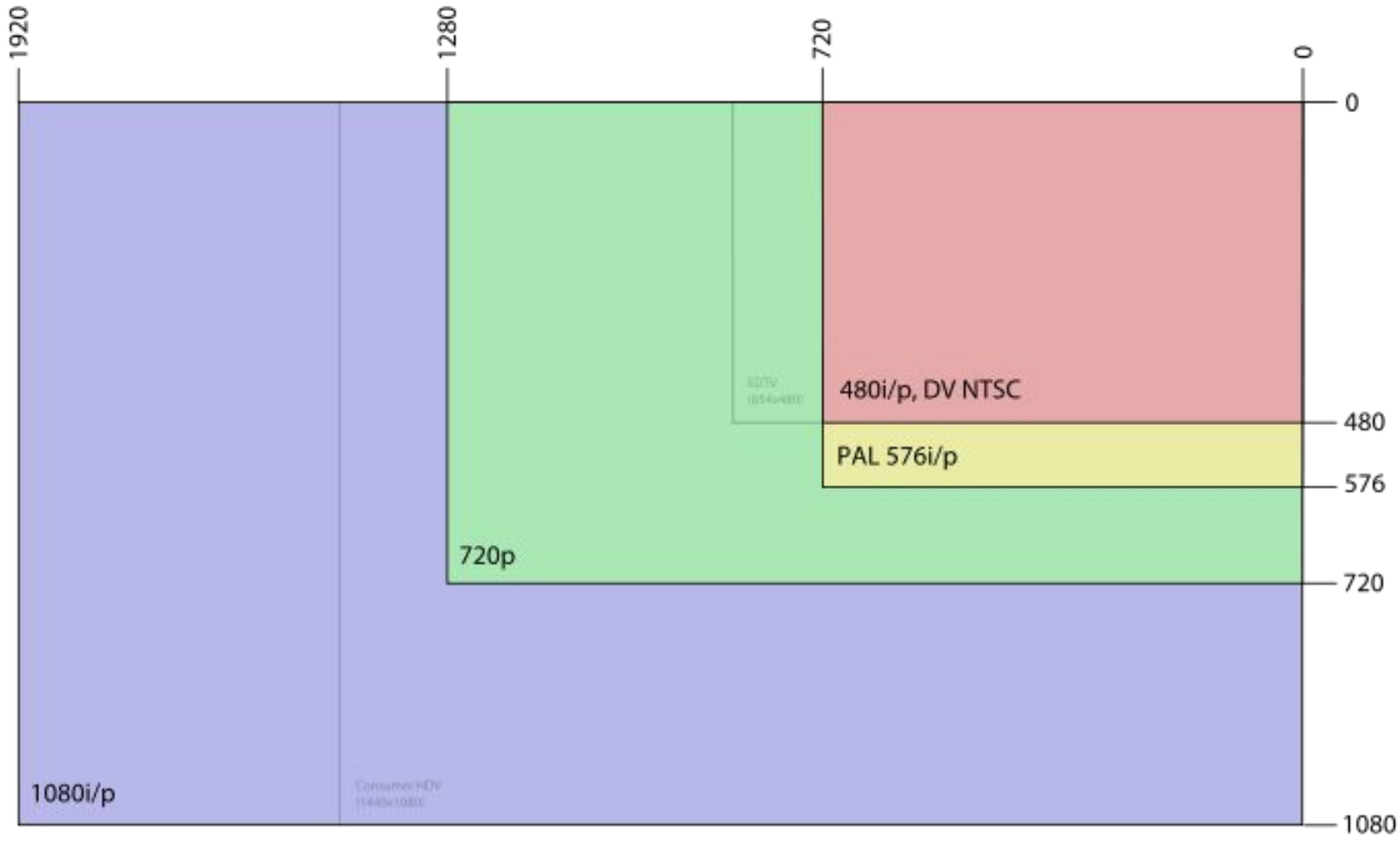
File Size and Quality

- Balance of Quality and Size
- Consider your source!
  - Adobe Premiere - match source
  - VHS quality

Resolution

- The size of a video, in pixels.

1920x1080 - 1080p	1280x720 - 720p
720x576	720x480
352x480	320x240


1920
1280
720
0
0
480i/p, DV NTSC
480
PAL 576i/p
576
720p
720
1080i/p
1080

Aspect Ratio

- The ratio of a video's width to height.

  4:3 - VHS formats
  16:9 - High Definition, widescreen

Frame Rate

- Frequency at which a device displays or captures the frames. (Frames per second)

  digital video: 24, 25, 30 (and on)
  film: 16, 18, 24

  VHS = 29.97

Bit Rate

- Bits per second
- How much data is processed/captured in each frame
- Higher bit rate = more data, higher quality, bigger size
- Balance Quality and Size

File Formats

- Video file is comprised of 2 things

  1) **Codec**: **Co**der/**dec**oder

  Software that compresses/decompresses data

  2) **Container**: Structure, how the file is stored (wrapper)

File Formats, continued

- Well supported?
- Open vs. proprietary?
- Quality vs. size
- Some common formats: AVI, MPEG-2, MP4, Quicktime, WMV, MOV

File Formats - Example

- At WSU, we use...
  Master: AVI or MOV
  Access: MP4

File Formats - Master and Access

- Preservation Master
- Access Copy
- Web-ready derivative

Standards

- Video standards - always changing/developing
- FADGI
  http://www.digitizationguidelines.gov/guidelines/
- Library of Congress Sustainable Formats http://www.digitalpreservation.gov/formats/intro/intro.shtml
- Library of Congress, NARA, AMIA, Universities

Moving Image >> Preferences in Summary

Table of Contents

• Device-independent digital video for end-users
• Encoded animations and moving image interactives
• Formats for professional moving image applications

Device-independent digital video for end-users (I

General

For content as delivered to end-users or consumers, generally comp
lossless compressed content). Clarity and fidelity characteristics (bits
file formats as secondary. Note that this page deals only with device-
consumer equipment, e.g., DVDs.

Bitstream encoding for video (relates to clarity and fidelity)

- Larger picture size preferred over smaller picture size. Picture size is expressed as horizontal lines and numbe
- Content from high definition sources preferred over content from standard definition, assuming picture size is e
- Higher bit rate (often expressed as *kilobits* or *megabits per second*) preferred over lower for same compression
- Surround sound encoding only necessary if essential to creator's intent. In other cases, stereo or monaural sou

File type

- Not copy-protected rather than copy-protected
- Relatively complete descriptive and technical metadata rather than minimal
- Acceptable file formats, in order of preference. Note that for audio streams in MPEG-2 and -4 formats, AAC is p
  - MPEG-2
  - MPEG-4_AVC
  - MPEG-4_V

Audio, Video, and Image Digitization: Technical Specifications and Best Practices

Introduction

This document provides basic specifications for audio, video, and image digitization. While exact specifications should be decided on a project-by-project basis, the following recommendations are sufficient for most audio files, standard definition video tapes, and photographic and textual documents. As a general rule of thumb, preservation master copies should be saved in an uncompressed or, in the case of videos, losslessly compressed format.

Audio Digitization

Preservation Masters:

The proper specifications for preservation masters depend upon the source materials being digitized and, in some cases, the amount of storage you can dedicate to saving digitized audio. The recommendations below will suffice for any digitization project, regardless of the amount of audio information captured. When digitizing music and language recordings, it is more important to digitize according to current best practices, like the ones below. For relatively low-quality recordings of spoken English, it may be possible to record at lower specifications (e.g., 16-bit / 44.1 KHz) without losing meaningful content. However, if you decide to capture audio, you should save preservation masters as a WAV file or as another uncompressed audio format.

- File Format: wav
- Bit Depth: 24-bit
- Sample Rate: 96 KHz

File Wrappers					
Attribute Category	**AVI**	**MOV**	**Matroska**	**MXF**	**MPEG-2 (ad-hoc wrapper format[17])**
Sustainability Factors	-Well-disclosed and moderately well-adopted -Transparent format, but lacks some self-documentation capabilities -Not likely to be impacted by patents or technical protection mechanisms	-Well-disclosed and widely adopted format -Fairly transparent with good self-documentation capabilities -Possible impact from patents and technical protection mechanisms	-Acceptable documentation and moderate adoption -Transparent format with good self-documentation capabilities -No impact from patents -Possible impact from technical protection mechanisms	-Acceptable documentation and moderate adoption -Fairly transparent format with good self-documentation capabilities -No impact from patents -Possible impact from technical protection mechanisms	-Poor documentation, but moderate adoption -Poor transparency and self-documentation -Possible impact from patents -No impact from technical protection mechanisms
Cost Factors	-Low implementation cost -Cost of software and equipment needed is low -Storage and network costs will depend on the encoding in use	-Medium implementation cost -Commercial software offers richest set of features and functions -Storage and network costs will depend on the encoding in use	-Low implementation cost -Low software and hardware costs -Storage and network costs will depend on the encoding in use	-Low to medium implementation cost -Costs of software and hardware vary widely -Storage and network costs will depend on the encoding in use	-Low to medium implementation cost -Low software and hardware costs -Storage and network costs will depend on the encoding in use
System Implementation Factors	-Low complexity -Wide availability of tools (except for validation)	-Moderate complexity -Wide availability of tools (except for validation)	-Moderate complexity -Wide availability of tools (except for identification and validation) -Many tools require advanced technical skills to implement	-High complexity -Wide availability of tools (except for validation) -Some tools require advanced technical skills to implement may not be interoperable	-Low complexity -Wide availability of tools (except for validation)

How to start digitizing?

- In house
- Collaboration
- Outsourcing

Factors to consider

- Size of collection
- Format
- Condition
- Time and Resources
- Budget

Discussion Questions - small groups

- What format(s) is/are your content?
- How much do you have?
- What equipment do you need? Or are you thinking of outsourcing?
- How will you add information/metadata to the items?
- How will you store the files that you create?
- Are there any challenges or roadblocks to your project?

VHS Preservation and Digitization

Physical Preservation and Handling


Newton Technology
Videos
(Complete Set)
TRT: 16:00
5/27/92
SR 046
Apple Computer, Inc.
20525 Mariani Avenue Cupertino, California 95014 (408) 996-1010

Tape as an Archival Medium

- Magnetized particles on a polyester backing, adhered with a binder (very similar to audio cassettes!)
- Not good for long-term preservation (10-30 years)
  - Specialized materials like LTO are different
- One option is to digitize
  - And then migrate digital formats as needed

Preservation Concerns

- Sticky residue or powder on tape, which makes it difficult to play the tape
- Binder degradation (oxide flaking off the base)
- Physical damage due to poor tape recorder maintenance
- Lack of equipment

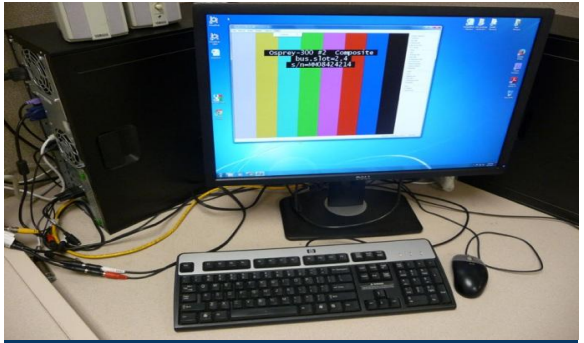
Handling and Storage - Extending the Lifespan of VHS

- Manufacture/production quality
- Care and Handling
- Storage Conditions
- Frequency of Access

Resources

- Association of Moving Image Archivists
  - http://www.amianet.org/sites/all/files/WheelerVideo.pdf
- Conservation OnLine (American Institute for Conservation)
  - http://cool.conservation-us.org/byauth/wheeler/wheeler2.html
- Council on Library and Information Resources
  - http://www.clir.org/pubs/reports/pub54/index.html
- Bay Area Video Coalition
  - https://bavc.org/
- Vtape
  - http://www.vtape.org/best-practices-guides

VHS Digitization Equipment



1
Playback device

2
Intermediary hardware

3
Digital capture device

Playback devices

- What do you need?
- What do you have?
- What can you scrounge?
- What is worth buying?

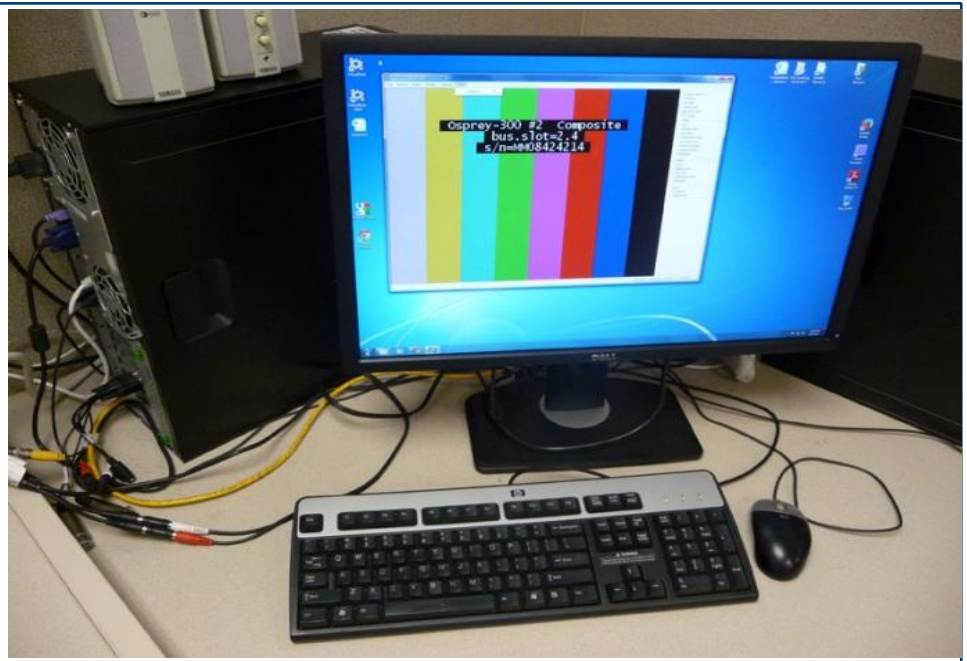
Intermediary Hardware & Software

- Digitization unit, to convert the analogue output from playback equipment to a digital format
- Software to manage the digitization and capture
- Software to edit and/or convert digital formats

Types of Digitization Hardware

Digital Capture Device

- A good computer
  - Not a laptop
- Good processor
- Enough RAM
- Appropriate ports
- Sufficient storage

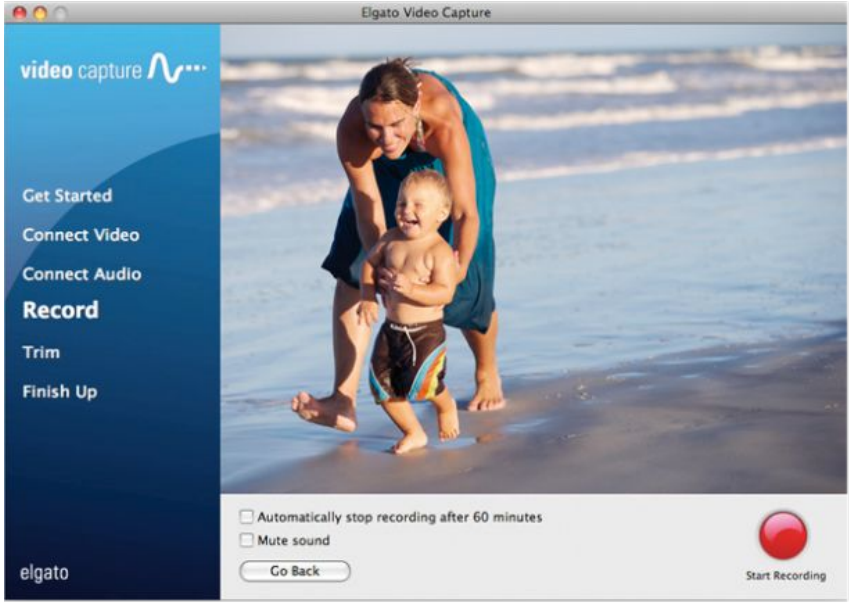


Capture Software

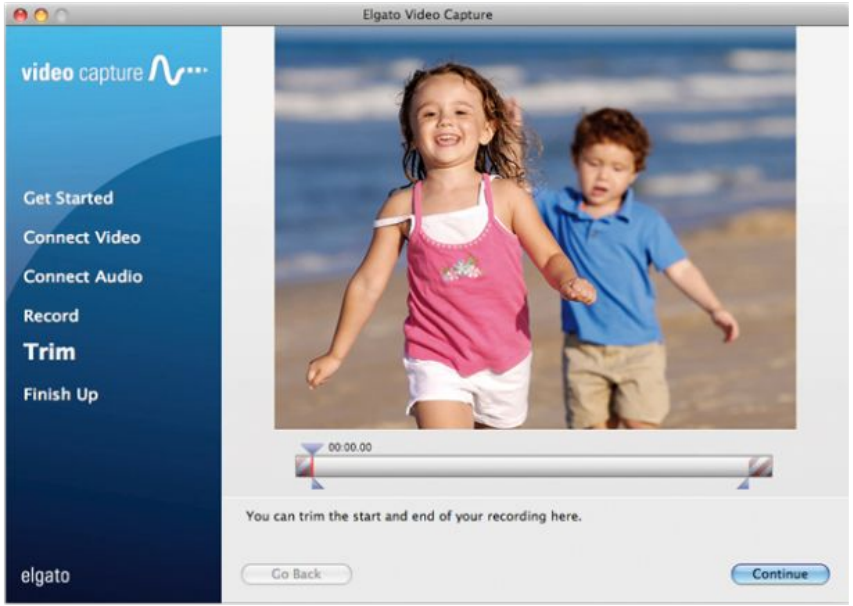
- WSU Libraries uses VirtualDub, Adobe Premiere, and Blackmagic Media Express
  - Depends on hardware and project needs
  - There are many others
- Most video capture cards include **compatible** software

Capture Software

Capture Software



Record



Trim

Warnings!

- Digitizing, editing, and converting video takes a lot of processing power
- Any time you're working with video, avoid doing anything else on that computer!
- Digitizing video generates large files
- Work in a space which keeps your files visible, so they can be easily deleted when done
    - And use well-planned file naming and folder structure

Digitization Demonstration

Hands-on Practice!

General Workflow

- Detailed directions on hand out
- Make sure everything is set up
- Enter your **filename** and save location
- Check audio and video connection
- Record (~5 min)
- Trim (if desired)

After Digitization: Editing

Editing Software

- Needed to edit video after capture
  - Trim, insert, add cards, etc...
- Needed to convert between common file formats
- If possible, find one piece of software that meets all your needs

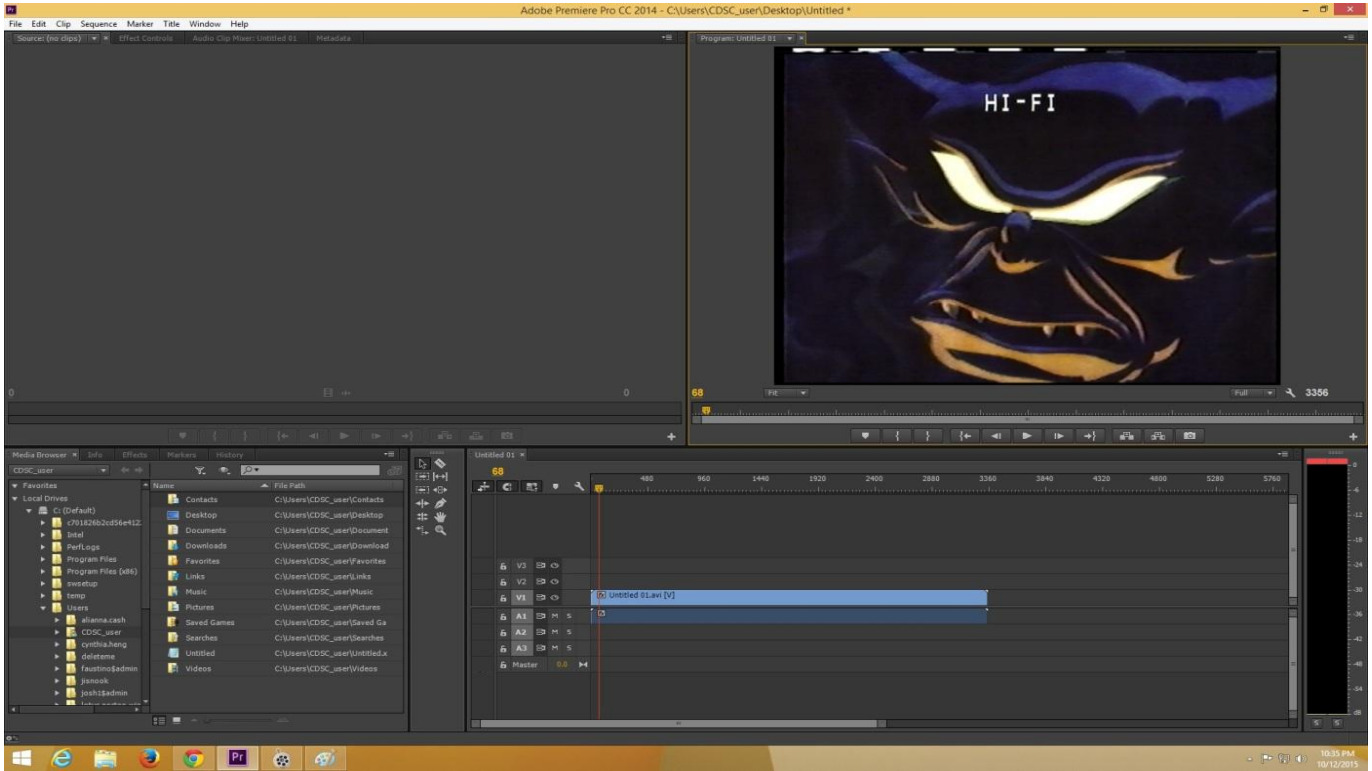
Professional Video Editing Software

- Adobe Premiere (Pro or Elements)
- CyberLink PowerDirector
- Corel VideoStudio
- Final Cut Pro (for Mac)

Open Source Video Editing Software

- Shotcut
- Lightworks
- Avidemux

Editing Software



Editing and Processing

- Title Cards, Credits, Branding
  - Watermarks
- Trimming excess/blank sections
- Insert still images into videos
- Adjusting audio or video levels
  - Colour correction

Editing and Processing

- Combining multiple videos
- Splitting one video into several
- Cropping or rotating
- Exporting different types of files

Digitization - Project Planning and More

Digitization - the whole picture

- Project Planning Questions
- Digital Preservation
- Quality Control

- Document everything!

Project Planning - Should We Digitize?

- Scope and timeline
- Outcomes and benefits
- Permissions and copyright
- How will you digitize?

Project Planning - Can We Digitize?

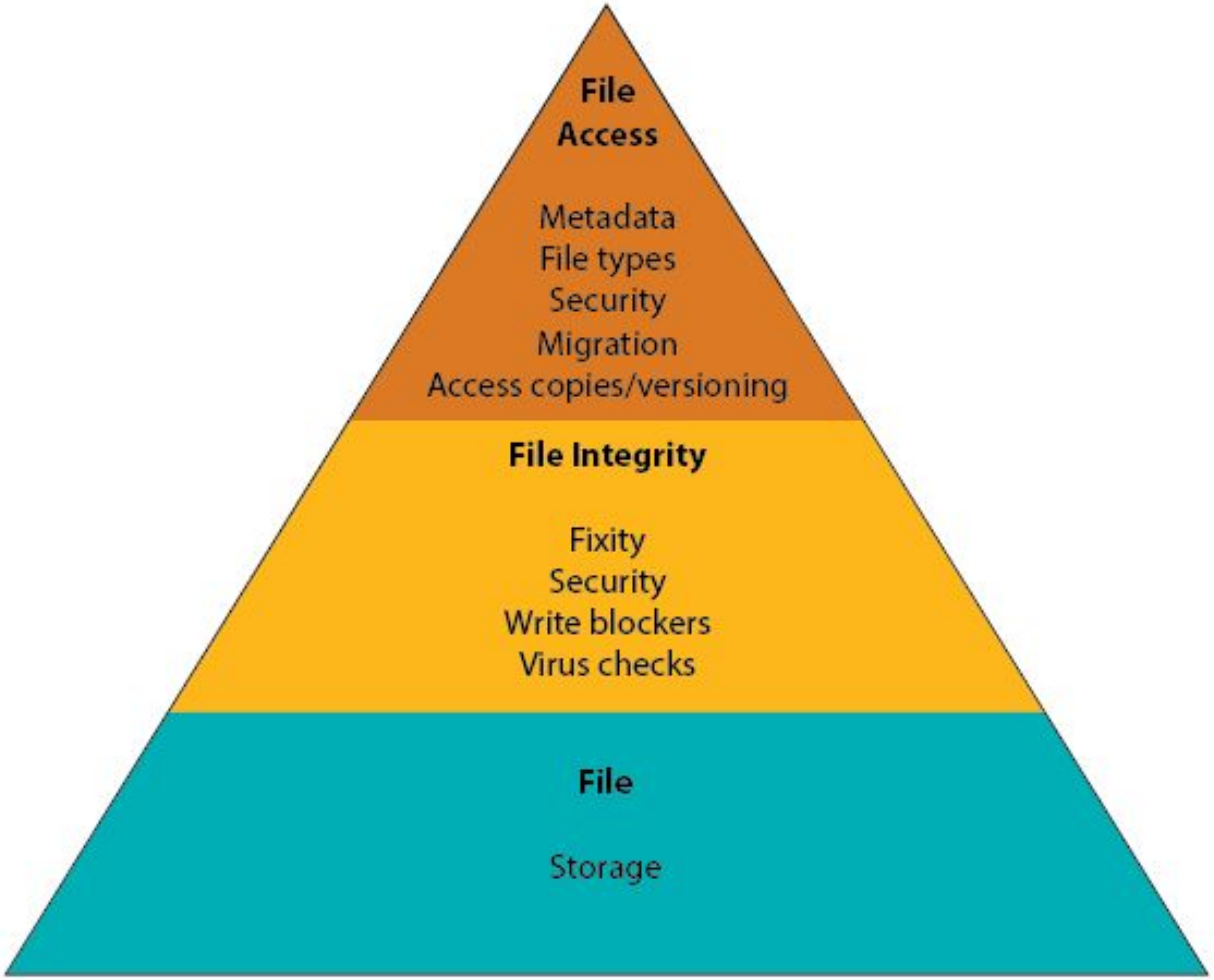
- Equipment and software
- Physical Space
- Staff
- Digital storage needs
- Metadata
- Providing access

Project Management Tips

- Clear timeline
- Digitization Logs or Tracking Sheets
- Clear folder structure and file naming system
- Staff training

Digital Preservation

- Long term storage and preservation of the digitized files
- Digital Preservation plan in place
  - Storage - 3-2-1 rule
  - File Integrity
  - File Access


File Access
Metadata
File types
Security
Migration
Access copies/versioning
File Integrity
Fixity
Security
Write blockers
Virus checks
File
Storage

Quality Control

- Two or more step process
- Design for many stages of your workflow
- Develop from beginning, include Quality Control into your policies
- Sample large projects

Quality Control for Video

- Storage and organization
- Integrity
- Adherence to decided technical specifications
- Metadata
- Visual and audio inspection - digital artifacts, mistakes, dropped frames

GUIDE TO QUALITY CONTROL AND QUALITY CHECKLISTS

What is Quality Control?

Digitization can be costly, take time, and mean extensive handling of original (and sometimes fragile) materials. For these reasons, the goal of any digitization project should be to create high-quality master images, audio, or video files from which several derivative images can be created for access and other uses. *Quality control* (QC) is an important part of any digitization project. QC includes procedures and techniques to verify the quality, accuracy, and consistency of digital files. Quality control should be conducted throughout all phases of the digital conversion process to ensure the materials need to be digitized only once, then can be used and shared many times.

Who is Responsible for Quality Control?

In most workflows, QC is performed in a two-step process: the person doing the converting performs an initial quality check during the digitization process, and then a different individual performs a second review in a separate process. If a vendor is conducting the digitization, this process will be different; however, it will still involve multiple stages of QC.

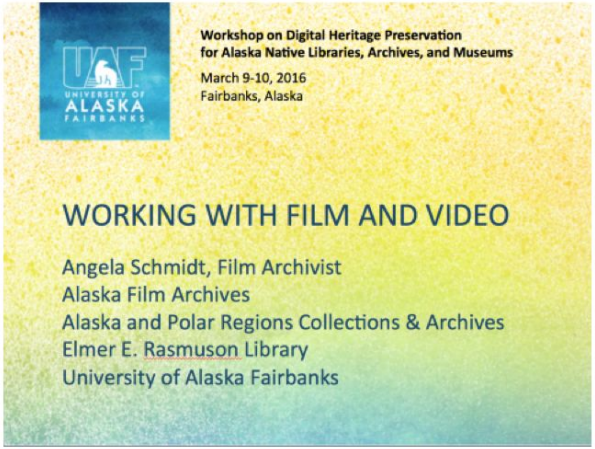
What Elements are You Checking in Quality Control?

Before you start scanning images or converting a/v materials, you need to determine the technical specifications (e.g. resolution, image mode, sample and bit rate, file format and storage medium) to use for your electronic documents in order to ensure their quality is preserved for the long term. This is the information that you will compare when you do your QC work. You should also clearly define the specific defects that you find unacceptable in an digital file so you and your staff know when a file needs to be re-digitized. If checking file fixity, you must decide on what method will be used to create and verify checksums.

More Resources

- Sustainable Heritage Network
- Preservation Self Assessment Program
- Museum of Obsolete Media
- Library of Congress
- Connecting to Collections
- Association of Moving Image Archivists
- AVPreserve

Working with Film and Video Collections



Workingwithfilmandvideocollectionswithnotes_AngelaSchmidt.pdf
FILE METADATA

COMMUNITY:
Alaska Native Language Archive, Collaborative Stewardship

PROTOCOL:
Public Access, Public Access

CATEGORY:
Film and Video, Workshop Session

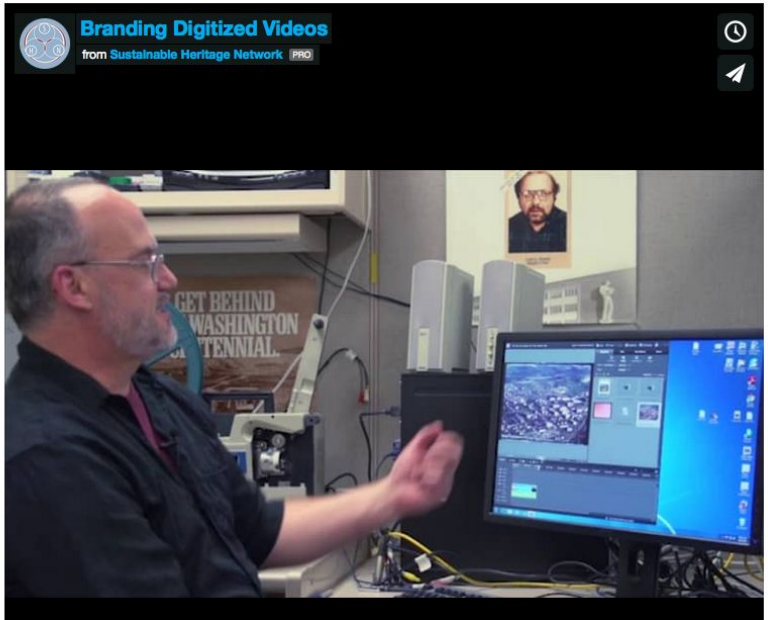
KEYWORDS:
accessioning, digital preservation, film, metadata, storage, slides, workflow

ORIGINAL DATE:
2016-03-09

CREATOR:
Angela Schmidt

LANGUAGE:
English

Branding Digitized Videos [Tutorial]



COMMUNITY:
Collaborative Stewardship

PROTOCOL:
Public Access

CATEGORY:
Film and Video

KEYWORDS:
tutorial, digitization

COLLECTION:
Moving Image Digitization

ORIGINAL DATE:
2014-10-09

CREATOR:
Mark O'English

CONTRIBUTOR:
WSU Global

LANGUAGE:
English

LICENSING OPTIONS:

PUBLISHER:
Sustainable Heritage Network

Thank you!

support@sustainableheritagenetwork.org (sign up for the SHN!)

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