VHS DIGITIZATION WORKFLOW

INTRODUCTION

This document provides a workflow for VHS digitization projects, including information about equipment set up, digitization, and metadata creation.

This workflow provides a high-level overview. For more detailed information about each of the steps mentioned here, and more on video digitization, view related items connected to this resource on the Sustainable Heritage Network in the "Film and Video" category.

- VHS Digitization Workstation
- VHS Digitization: Best Practices and Training

1. CONFIGURE AND TEST EQUIPMENT

Equipment should always be configured and tested before beginning any digitization work. If any equipment needs replacement, repair, cleaning, or other maintenance, see to that before digitizing, as damaged equipment could harm the materials. Specific equipment choices will vary with funds, project needs, equipment availability, and other factors.

Hardware

- VHS Cassette Deck (VCR): There are very few manufacturers that produce new VHS cassette decks, and they may need to be special ordered through distributors. Good quality refurbished or second hand decks are viable alternatives, provided they are inspected, cleaned, and serviced prior to use.
    - Clean and inspect your deck for signs of wear or damage. Ensure that it is in good working order before using.
    - It is good practice to have a maintenance log for any equipment, and a record of service.

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- Video Capture Device: Video capture devices connect the video player (in this case, a VHS cassette deck) to the computer and convert the analog signal from the player into a digital format that can be read by and stored on a computer. Video capture devices come in two form factors, including PCIe cards installed in a computer, and external devices that connect to the computer via USB or another standard.
- External Time Base Corrector: A time base corrector buffers and corrects the signal coming from analog video tapes, and is necessary for quality transfers. Some VHS cassette decks (especially broadcast quality units) and video capture cards have time base correctors built-in, otherwise, an external time base corrector should be used.
  - Ensure that your time base corrector (if being used) is properly connected to the cassette deck and video capture device.
- Computer: A computer is required to capture, edit, and store the video files output by the video capture device.
- Headphones or speakers that will allow you to accurately monitor whether the sound is being received clearly by the workstation.
- Supplies in case of repair (empty cases, screwdrivers, and gloves).
- Digitization logs or spreadsheets (or any other tracking documentation) to track the work completed and capture metadata.

Software

- Video Capture Software: Video capture software is required to complete the capture process and export the video in a playable format. Once the video file is captured, it can be reformatted and edited as needed - often using a separate video editing software.
  - Check that settings are correct (such as whether the recording stops if frames are dropped), and make any necessary software updates.
  - Check capture settings, especially:
    - Device input
    - Incoming video format (likely NTSC or PAL)
    - Capture file format (likely some configuration of AVI or MOV)
    - If your software saves files directly to disc, check location of saved files.
    - Note that some of these may also need to be adjusted in the video capture device settings.

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- Video Editing Software: Video editing software is necessary to make minor edits to your digitized video and create access copies. Edits may include increasing or decreasing audio, splitting tapes containing multiple videos, and branding your videos.
- Digitization logs or spreadsheets (or any other tracking documentation) to track the work completed and capture metadata.

2. PREPARE AND INSPECT THE VHS TAPE

Each VHS tape should be inspected to ensure it will not be damaged during playback and will not leave residue or damaging substances, like mold, on the VCR. This inspection may be part of an initial condition assessment conducted before any digitization begins, or may take place item by item while digitizing. See the "Preservation Self-Assessment Program" for more information.

1. Engage write-protection tabs to make sure the tape is not accidentally recorded over.
2. Test winding of tape by pressing release button on the back of the tape with a pen or pencil then winding the tape with your other hand using a quarter to turn the teeth of the take up reel.
3. Make sure VHS tape is rewound. Rewind, if necessary.
4. Check for damage to casing, and repair or rehouse in new casing if necessary.
   a. Broken case
   b. Broken reel teeth
   c. Immobile reels
   d. Other missing pieces
   e. Mold inside case (most cases are opaque, so may be difficult to identify)
5. Check for damage to tape and repair if possible.
   a. "Sticky shed" (metal flakes coming off the tape)
   b. Bunching or tape sticking to itself
   c. Mold on tape
   d. Tape incorrectly wound through cassette
   e. Folds, creases, or breaks in tape
6. Make sure VHS case is clean and free of dust, dirt, and abrasive substances.
7. If damaged tapes are found, document the damage, set aside to repair or send out, then proceed with digitization of tapes that are in good condition. Be especially cautious with mold, and immediately quarantine affected items before taking other repair steps. Most outsourcing vendors will not handle moldy tapes.

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3. CAPTURE VIDEO

Digitizing VHS takes place in real time. If a tape is 90 minutes long, it will take at least 90 minutes (plus set up time) to digitize, and then additional time to edit and export. Plan accordingly.

1. Load tape in deck
2. Begin recording in your video capture software
3. Wait a few moments, then begin playback on VCR
   a. It's better to capture a few seconds of dead air in front of the video and edit that out later, rather than risk missing a portion of the video.
4. Continuously monitor the video and audio during recording
   a. If there is tape damage or something unexpected happens, you will hear it immediately and can stop the tape deck to minimize damage.
   b. If your workflow includes taking brief notes or identifying content on unknown tapes, you may want to do this while digitizing, rather than having to playback the audio file later.
   c. You can either monitor over speakers or with headphones as appropriate.
   d. Monitoring may not be appropriate with all tapes, especially if there is potentially culturally sensitive material on them. In which case you will need to decide the best workflow to ensure proper recording. This may include having relevant stakeholders monitor the tapes.
5. When the tape stops, end the recording.
6. Rewind the tape.
7. Watch selections of the video and spot check the quality.

4. SAVING, EXPORTING, EDITING

In most cases, a preservation master and an access copy of each file will be generated, following the specifications laid out in your project plan (see the "Digitization Planning" resource on the Sustainable Heritage Network). Ensure that files adhere to your file naming system and file structure established earlier.

1. Some video capture software saves directly to disc, so an initial export may not be necessary.
2. Export a high quality archival master (most likely an AVI or MOV file)
   a. If edits are needed, do not directly edit the archival master - work from a copy.

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3. Export a compressed access copy (most likely an MP4 or MPEG2 file) of the edited master.
   a. If making edits, preserve the editing software project file.
   b. If any further derivatives need to be made, work from the access copy if possible.

6. METADATA AND DOCUMENTATION

Metadata and documentation is necessary to manage and provide access to digitized files. Some descriptive metadata may be recorded before digitization (from records, or the physical items), and some may be capture during digitization (see above). Technical metadata about the items, equipment, and digitization, and workflow records are often captured at this time in the relevant external spreadsheet, digitization log, or management system.

1. Record descriptive, administrative, technical/preservation metadata for each file (and all derivatives) and enter into spreadsheet, database, or other documentation system.
2. Keep any video capture metadata produced by the video capture software in the same folder as the preservation master file. Record data elsewhere if desired.
3. Record progress in the digitization log.

GLOSSARY

- AVI (Audio Video Interleave) - A digital video format that can contain uncompressed or compressed videos.

- MPEG2 - A commonly used format for containing compressed videos.

- NTSC (National Television System Committee) - The standard used to encode most VHS tapes made and used in North America. The common standard used in Europe is PAL (Phase Alternating Line). NTSC tapes will only play on NTSC decks. The same is true for PAL tapes and decks.

- YUV - The color space used by most videos, similar to RGB for digital images.

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ADDITIONAL RESOURCES

- Preservation Self-Assessment Program -- Audiocassettes:
  https://psap.library.illinois.edu/advanced-help/av-audiocassette
- AVPreserve -- A Primer on Codecs for Moving Image and Sound Archives:
  https://www.avpreserve.com/wp-content/uploads/2010/04/AVPS_Codec_Primer.pdf

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