



Community Archiving Workshop

Webinar #8: Video Digitization Kit

Southwest Region IMLS + NEH Cohorts

Shahed is a 2018 graduate of NYU's Moving Image Archiving and Preservation masters program and currently works as an audiovisual archivist for California Revealed, based in Sacramento at the California State Library. California Revealed helps universities, archives, libraries, and other cultural heritage organizations across California digitize, preserve, and provide access to their collections.

Video Digitization Kit

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Presenter: Shahed Dowlatshahi

In this session, participants will be introduced to a portable video digitization kit. The main components of the kit are an analog/digital converter, a TBC, a VCR deck, a MacBook Pro, an audio mixer, headphones, a hard drive, and necessary cables and connectors housed inside a watertight Pelican case. Although the kit includes a VCR deck, it is capable of digitizing other analog video formats (such as U-Matic, Betamax, etc.) with the addition of the appropriate playback deck.

#cawesome

Hi Everyone, my name is Shahed Dowlatshahi and I was happy to help put together the digitization and film inspection kits for this project and to present 3 webinars demonstrating the use of the kits. In this session, we will talk about the portable video digitization kit.

The main components of the kit are an analog/digital converter, a vhs deck, a TBC, a MacBook Pro, headphones, a hard drive, and necessary cables and connectors housed inside a watertight Pelican case. The kit includes a VHS cassette deck but is capable of digitizing other analog video formats (such as umatic and betacam) with the addition of the appropriate playback deck.

Overview

4 Portable Kits:

- 1 audio digitization kit (aug 9)
- 1 video digitization kit (TODAY)
- 2 film inspection and repair kits (sep 1)

Overall, four kits were created, one audio digitization kit, one video digitization kit, and two identical film inspection and repair kits. We talked about the audio digitization kit a couple of weeks, and today we will be focusing on the video digitization kit. Two weeks from now we'll talk about the film inspection and repair kits.

Outline

Video Kit Components/Hardware

Video Kit Applications/Software

Video File Types

Video Kit Setup and Demonstration

Discussion and Questions

Here is a general outline of what I'll talk about today for about an hour: I'll start with a set of slides summarizing some of the main kit components, move on to talking about some of the software used in the kit, talk about the two main types of video files that we would ideally create in a digitization project, and then show a recorded video of the kit setup and demonstration. Then we can open it up for questions and discussion.

Video Digitization Kit

Components



So let's jump in. First, let's take a moment to go over the contents of our video digitization kit. Here you can see the components of the kit all set up and laid out.

Kit Components

Case
VCR Deck
A/D Converter
TBC
MacBook Pro
Audio Mixer
Speakers
Headphones
External Hard Drive
Cables and Connectors

Here is a basic overview of the contents of the kit. We'll go through all the components, what they do, and how to set them up to digitize VHS tapes. All kit components are labelled and I've tried to make it as easy as possible to identify components and connect the cables. Before moving on to a full demonstration of the kit, let's take a closer look at each of the components.

VCR Deck

Panasonic

PV S7670

Used

\$200



When digitizing any physical media, an essential component is a playback deck. Today, most playback decks for analog media (VHS, umatic, etc.) are no longer manufactured. This video digitization kit includes a used Panasonic Deck, purchase from eBay for about \$200.

On the back of the deck there are a set of outputs (which the analog video and audio signals will be coming out of) and a set of inputs for recording, which we will not use.

I also want to emphasize that although this kit comes with this particular video cassette deck, if you have a different playback deck and would like to digitize a different format, you can use this kit to digitize that format, as long as you have RCA outputs on the deck (which almost all analog audio equipment have).

A/D Converter

Blackmagic Intensity Shuttle - Thunderbolt 2

New

\$250



The next critical component is the A/D converter or analog/digital converter (I'll just refer to this as the converter going forward). The function of this device is to convert an incoming analog signal into an outgoing digital signal, just like the name suggests. So the analog signal that we are taking out of the VCR deck will be coming into this device, the device will convert it into a digital signal, and another cable will carry out the digital signal to the computer where it will be written to a hard drive as a digital file. This kit uses a Blackmagic Intensity Shuttle with a Thunderbolt 2 output which was purchased new from ebay for about \$250. These are really great devices for digitizing analog video, and although they are no longer manufactured, new units can still be found online.

MacBook Pro

16GB Ram
500GB storage
\$1500



We also need a computer to be able to run the software to control the converter and to write the digital signal coming from the converter to a hard drive. In this case we are using a macbook pros with an internal RAM of 16GB and a 500gb internal hard drive (the internal hard drive will not be used for storing the digital files, as it is not of a very high capacity - instead the kit includes a 1tb external hard drive that will be connected to the laptop and used to store the files). This computer is the most expensive part of this kit and cost about \$1500.

TBC

Pixie FS

New

\$750



Besides the computer, the most expensive and difficult to find part of this kit is the Time Base corrector. Before the analog video signal coming out of the VHS deck can be digitized, it needs to go through the time base corrector. What happens inside the time base corrector to the video signal is quite complicated, but basically the TBC stabilizes the signal coming out of the vhs deck and allows it to be properly digitized using the analog to digital converter. Many video playback decks have their own internal TBCs, so make sure if you are using a different deck to digitize a different format, that you first know if you are going to need to use the TBC or not. Please note that only the video signal is run through the TBC, and the TBC doesn't take or output audio signal at all. The TBC also allows us to control the levels of contrast brightness and color of the video signal, so if you are not happy with the quality of the image, we can take a look later at how the TBC can be used to adjust these settings to get a more accurate representation of the original tape.

Audio Mixer

402VLZ4

Used

\$100



The audio signal (left and right channels) coming out of the VHS deck can go directly into the A/D converter, but that would mean we would not have any control over adjusting the audio level. So before sending the audio to the converter, we run both channels through an audio mixer, which allows us to adjust the audio levels, so all of the audio signal is being captured at a good level with any clipping or loss.

Digitization Software

Desktop Video Setup

Included with Intensity Shuttle

Set ingest parameters



Blackmagic Media Express

Included with Intensity Shuttle

Allows control of converter



vrecord

Free and open source

Allows additional control of video signal

Besides the hardware, a set of software is required to make this process work. The necessary software are those listed in bold.

First is Desktop Video Setup, which allows our computer to recognize the Blackmagic Intensity Shuttle converter that's connected to the computer.

Second is Blackmagic Media Express which is basically the software that controls the settings for the converter and allows us to digitize tapes, and this can be downloaded for free when you've purchased the device and it has already been installed on this kit's MacBook.

Digitizing using this kit with just the desktop video setup and the blackmagic media express is relatively simple and straightforward, but it doesn't allow us too much control over adjust the contrast brightness, and color of the video image that we are digitizing. But if you want to use the TBC to adjust picture settings, an open source software developed by the AMIA community called record

allows us to do this.

File Type

**Video
Digitization**

- **Preservation File**
 - As close a representation of the analog audio as possible
 - Uncompressed
 - No editing or noise-reduction
 - Large files

With any digitization project, it's important to lay out the specifications of the resulting digital files in the beginning. As you will see in the demonstration, when you begin the digitization process, you have to decide on what type of files you'd like to export from the software - what format, what sampling rate, what bit-depth, what bit-rate, and the many other technical parameters that you can specify for a digital file.

In general, the main goal is to recreate the analog signal that is recorded on the video tape as accurately as possible in a digital file - this means creating an uncompressed preservation master file with no level-boosting, no editing and no restoration. These preservation files are meant to be preserved for the long-term and are generally larger in size and not necessarily meant to be used for sharing and listening. Unlike the audio digitization kit, the softwares used in this kit, do not directly produce a smaller access file that is meant for use and sharing. Software such as adobe media encoder or ffmpeg can be used to create such derivative files, from the preservation master file that you've created.

Video File Specifications

Preservation files

Preservation Files

Format: Uncompressed MOV (.mov)

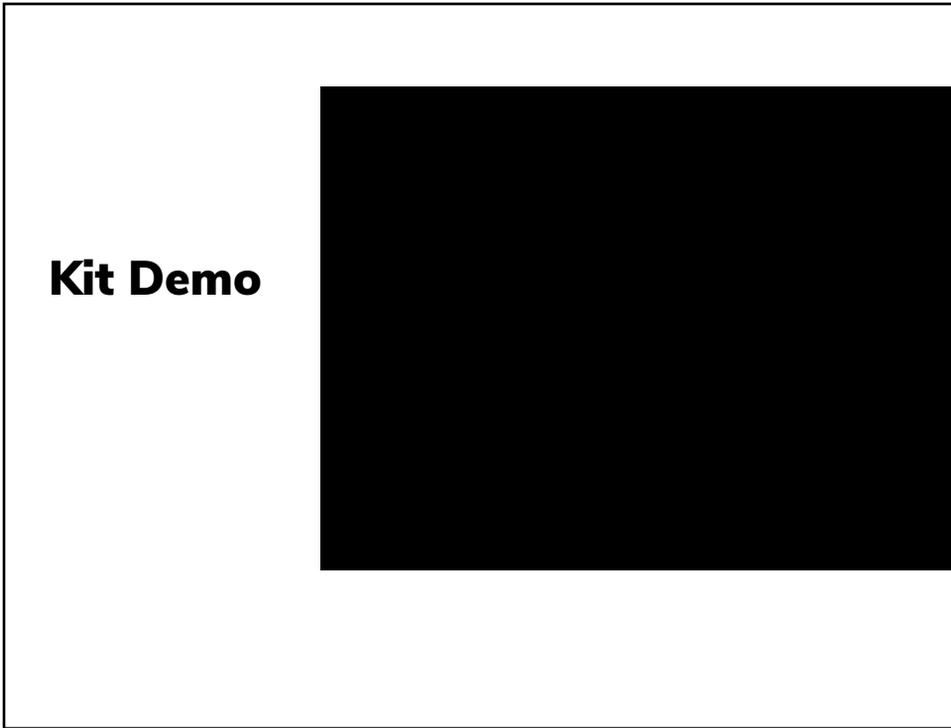
Bit depth: 10-bit

Sample rate: YUV

Standard Definition: 720 x 486



Here you can see the basic parameters for the type of video file produced with this portable video kit.



https://drive.google.com/file/d/1xfXn0MM-_sk5AmxaWj9EouQAZjNtigggQ/view?usp=sharing

Thank you!



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