

Competencies

- History and progress made in video tape editing
- Control track and time code processes
- Assemble and Insert editing
- Edit Techniques
- Non-Linear Editing

History

Initial Attempts at Video Tape Editing

Because the development of video tape recording paralleled the development of audio tape recording, a similar method of editing was tried on videotape. Audiotape is physically cut and taped back together in the splicing process. This is relatively easy in full track audio, but the cutting of a 2" videotape at a precise point proved difficult. The tape had to be cut at an angle and at a specific point as not to disrupt the picture. This was accomplished by placing a chemical on the tape to expose the magnetic pattern and cutting at the exact start of each frame.

Electronic Editing

Audible Tone

The first attempt at electronic editing began in 1963. Edit points on the record and playback tapes were marked with audible tones. The tapes were then rewound the same length. The machines were then started at the same time. When the operator heard the tone, he punched in the record button. There was little accuracy in this first attempt at electronic editing.

Control Track

An electronic mark or pulse on a separate track denoting the start of each frame soon replaced the audible tone. Relative locations on the tape could then be found. When a frame was selected as an edit point, the tape was rewound a specific number of pulses on the record and playback machines.

The machines were started together and the number of pulses was counted to determine the edit point. This control track method was much more accurate than the audible tone, but sometimes the counter missed or added a few pulses and the resulting edit was not frame accurate.

SMPTE Time Code

To solve the problem of identifying an individual frame, an additional signal is recorded on the tape. This is a binary analog signal that identifies each frame with a discrete number. This time code is read in hours, minutes, seconds, and frames. By providing each frame with a specific address, it is possible to easily find specific frames and perform frame accurate edits.

Time code that is recorded on tape in the same manner as an audio signal is called longitudinal time code. The other method is recorded with the video signal and is called vertical interval time code.

There are also two modes in which time code can be recorded. Drop frame time code corrects video time to clock time. For every second of clock time, 29.97 frames of video occur. This creates an error of .03 frames per second, or 3.5 seconds per hour. Drop frame corrects this error by changing its frame identification numbers. Two frame numbers are skipped every minute except for 10, 20, 30, 40, 50, and 60th minutes. As an example, 10:17:59:29 advances to 10:18:00:02. Frame numbers :00 and :01 are skipped.

Non-Drop Frame.	:28	:29	: <u>00</u>	: <u>01</u>	:02	:03
Drop Frame	:28	:29	:02	:03	:04	:05

Linear Editing - Edit Types

Assemble Edit

The simplest type of edit employed in video production is the assemble edit. At the selected edit point, after the player and recorder have had time to lock up in sync, completely new signals are recorded beginning at that point on the tape. New audio, video, control track and time code signals are laid down on the tape. The program is completed using a series of assemble edits.

Insert Edit

The insert edit provides greater flexibility in editing by allowing the operator to select new audio channels and/or video signals to be recorded on the tape while not interfering with the control track and time code that were previously recorded. Before a tape can be inserted upon, it must be "Blacked", recorded with a black signal level, control track, and time code. This makes it possible to "insert" a block of audio and/or video into previously recorded material. An OUT point is selected and when this point is reached, the audio and/or video signal is returned to the previously recorded material without a breakup in the picture.

Edit Techniques

A/B Roll

This videotape editing technique is an adaptation of an established film-editing method. In film A/B rolling, you splice the odd-numbered shots on one roll and the even numbered shots on another. Black leader film is spliced in between each shot with the length corresponding the time of the scene on the other roll. Both rolls are then printed together to make the final film.

A/B rolling in video is much easier. Alternate scenes are placed on each roll but black leader is not necessary. In and out points are selected for each tape and the edit controller then selects the proper tape. By using two source tapes, dissolves and wipes can be performed.

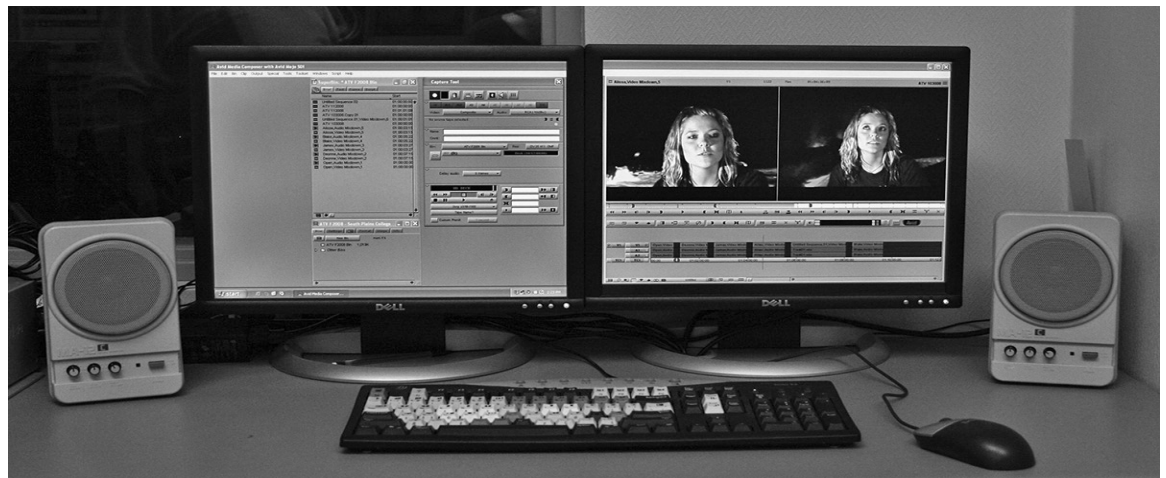
Non-Linear Editing

Computers are used for almost all video editing done today. There are several different companies that offer editing software. The source material is still captured on videotape, DVD, Blue-Ray or P2 cards, but it is then digitized and placed on a computer hard drive. The program is then edited by laying out individual frames or clips representing specific scenes on the computer screen. The clips are then placed on a timeline. Here they can be trimmed, lengthened, and moved out of sequence by cutting and pasting. Dissolves, wipes, and other transition effects can be added between the clips. Graphics and animations can also be keyed over the video. Audio is added on the audio tracks of the timeline. If changes are to be made, they can be done easily, without reediting the complete program.

After the program is complete, it can be recorded back on videotape or DVD.

Computer Hardware

The Avid Media Composer that you will be using is on Dell computers with a high-speed hard drive for projects. There are also two 19-inch multisync flat monitors.



All of the video and audio is stored on hard drives and in various compression methods are used to reduce the amount of information that must be recorded. Image quality is also determined by amount of information that can be stored. Using the lowest quality image format gives the longest recording time. Using the highest image quality, the disk can hold hours of video and 2 channels of audio. A 250GB hard drive will hold approximately 18 hours of video at a medium resolution with two tracks of audio.

Using the mouse, click on the “Avid Media Composer” icon to start the program.

The computer also comes with a unique keyboard, which is color coded and has different symbols on it that you will need to know what they mean.



Editing Process

Creating a Project

You can create a new project or select an existing project to work with. When the “Select Project” directory appears, you can select a project’s folder that has been created previously, or select New Project and name the project and click OK.

After you have chosen a project, the Project window appears on the screen. If you need to adjust any of the available options, click the settings button and then double click the various areas available. The Deck preference is used to select the recorder. The Monitor and Timeline settings control how the clips will be viewed.

File System

When you digitize audio and video, the actual material is saved in media files on the hard disk. One Media file is created for each track of video or audio that you digitize. Another file, called a clip, is simultaneously created on the hard drive. This clip points the actual media file when it is needed. Clips are stored in bins. Each project in the folder then can contain bins. A bin holds clips, master clips, graphics and transitions and filters.

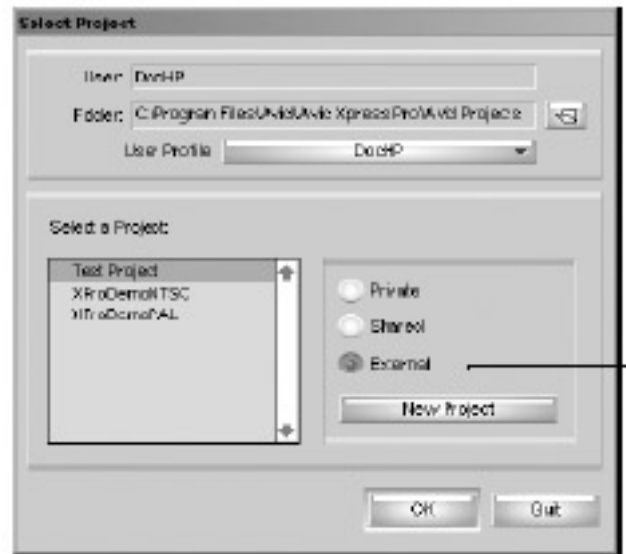
Capturing source material

Media from various sources can be digitized onto the hard disk. Video and audio tapes, CD-ROMs, Photo CDs, and computer files from graphics and animation programs can be imported or captured into the Avid Media Composer.

Videotape is the primary source material to be captured. “Bin” is the term of the film industry used for a container where scenes or cuts of film footage are stored; this same term is used in Avid for a folder where captured media files are stored. The process is:

1. If Avid is not opened yet, double-click the Avid icon on the Dell desktop (monitor). (F1 pulls up Help.)

2. In the “Select Project” window, be sure the path in “Folder” goes to the media drive “D:”



3. In the “Select Project” dialog box, select “External” and click on the “New Project” button. In the new window, type the name you want for your project and click OK. This will create the project in a new bin.

4. At the top of the screen, choose “Tools” and select “Capture” from the menu.

5. In the “Capture Tool” window, choose which type of source material (Video/Audio) to capture and where to store it on disk. Verify that the “Bin” window contains the name of the project you provided and the drive showing below it shows “D:”.

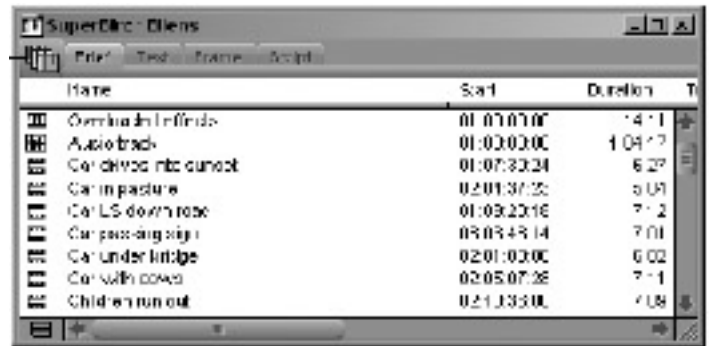


6. Use the “Name” window in the center to name your first Clip and add any comments in the window below it.

7. Under the video/audio settings, click the “Source Tape Display Button” (which may show either “Capture” or “No source tape selected”). In the “Select Tape” dialog box that appears, click “New” and type a new tape name (Tape1 for example) in the text box that appears at the bottom. Once the tape name is selected, click OK.
8. Select the source machine underneath the control buttons in the deck control section.
9. Make adjustments to the audio and video if necessary selecting the vectorscope and speaker icons on the Capture Tool screen.
10. Operate the deck controls just like on a VCR or DVD player using the mouse and the icons.
11. Select the Mark IN and OUT points of the clip you want to capture.
12. Click the record button on the top left corner of the Capture Tool screen.
13. The first clip will be put into a “superbin”, which you will need to name, but as you record the subsequent clips, you should name each separately in the Bin.

Viewing and Arranging Clips

Clips can be viewed in the SuperBin as a list (Brief) or in a frame view by clicking the appropriate tab on the top. To view the clip, double click the icon beside the name in the Brief view or the clip icon in frame view. The clip is then shown in the Source window. The clips can then be refined by trimming



Name	Start	Duration	T
Overhead in friends	01:07:07.00	4:1	
Audio track	01:03:03.00	1:04:7	
Car drives into tunnel	01:07:33.24	6:27	
Car in pasture	02:01:37.22	5:07	
Car LS down road	01:03:22.16	7:2	
Car passing sign	03:03:43.14	7:01	
Car under bridge	02:01:03.00	6:02	
Car with cows	02:05:07.28	7:1	
Children run out	02:13:30.00	4:08	

the IN and OUT points. Move the Position Indicator to the start point and press the “I” key. Move the Positioner to the end point and press “O” for the out point. Clips can also be combined and arranged in “Sequences” and stored in the SuperBin.

Creating a sequence

Once the clip is opened in the Source Monitor (left), you can mark the portion you want and edit that part into the sequence. This is done by double-clicking the clip name in the bin and then Mark In at the starting point and set Mark Out at the end. Then, turn on/off the audio and video layers as needed. Next you will edit that part into your sequence on the Record Monitor (right).

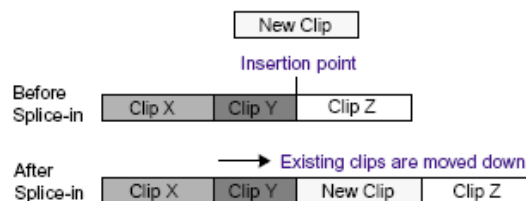


Sequence Edits

There are several types of edits. The primary edit functions are splice-in and overwrite. In most cases, you perform three-point edits in which you set three marks — two in the source material and one in the sequence, or the reverse. The fourth mark is determined automatically. The way you set marks depends upon the type of edit you perform.

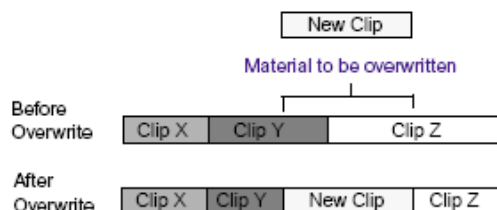
Splice-in Edit (Yellow Arrow Pushes Existing Material to the Right)

A splice-in edit inserts material from the Source monitor into the sequence without replacing material already in the sequence. Existing material in the sequence is moved beyond the new material, lengthening the overall duration of the sequence.



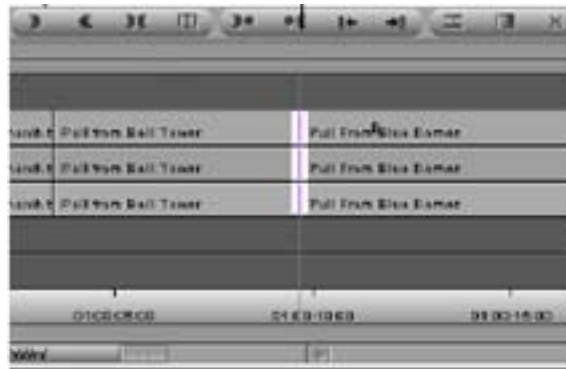
Overwrite Edit (Red Arrow Overwrites Existing Material)

An overwrite edit replaces a section of the sequence with the material you select from the Source monitor. Unlike a splice-in edit, an overwrite edit replaces existing material and therefore does not lengthen the overall duration of the sequence.



Trim Edit

Trimming allows you to fine-tune your sequence by adjusting the incoming and outgoing frames of the clips without having to mark IN and OUT points. You can select and shorten one side or the other, reducing the duration of the sequence or you can select the transition and remove frames from one side while adding frames to the other side, which will maintain the duration of the sequence.



(Avid uses many of the standard window shortcuts, including Ctrl Z to undo last action.)

Sequence Effects

You can also add effects to a Sequence in the Timeline. Effects editing techniques fall into four basic categories: Transition, Segment, Title and Motion.

Transition Effects

Transition effects (dissolves, wipes, and so forth) are applied at the cut point between two video clips that are on the same video track (that is, the same video layer)

Quick Transition

To create an effect using the Quick Transition button:

1. Move the position indicator to the transition in the Timeline.
2. In the Tool palette, click the Quick Transition button.
3. Select a dissolve or fade type and drag it to the timeline and drop it onto the appropriate transition point.

Using the Effect Palette

You can access the Effect Palette in the Project Window under the Effects tab. The Effects Palette includes more transition effect types, including blends, wipes and 3D effects.

1. Select the effects category on the left and the desired effect on the right.
2. Drag the desired effect to the timeline and drop it onto the appropriate transition point.
3. To render effects, select the segment you want to render, then go to the “clip” tab on the toolbar or to the “fast menu”.

Segment effects are applied to an entire clip or group of clips. There are two types of segment effects:

A single-layer segment effect, such as the Mask effect, is applied to a segment on one video track. Single-layer segment effects use one stream of video.

A multilayer segment effect, such as the Picture-in-Picture effect, is applied to the top layer or a middle layer of segments that contain two or more video tracks that will be played simultaneously.

Title effects are created with the Title tool and edited onto their own layers in a sequence.

Motion effects (freeze frame, variable speed, and strobe) are created by manipulating the playback characteristics of a clip of footage.

Working with Tracks

To create a new track, click on the clip tab and select new video track.

To add media to a different track, deselect the current layer and drag the track selector (left of the track label) up or down to the desired track. In the example to the right, the track selector has been moved from V1 (Video Track 1) to V2 (Video Track 2).



Recording your program to video tape

The two basic methods of recording to tape are “Frame-accurate recording”, using the Digital Cut tool, and “Manual recording”, using controls on the record deck. Each method requires different treatment of the record tapes.

Frame-accurate Recording

Frame-accurate recording involves using the Digital Cut tool to record your sequence onto a pre-stripped tape (a tape with prerecorded control track and timecode) or a partially striped tape.

Manual Recording

Manual recording involves bypassing deck control in the Avid application and using manual operation of the record deck. Because the timing of playback is based on manual procedures, the recording is not frame accurate. However, you do not need to record timecode onto the tape in advance. You can also record onto non-Avid controlled decks

To record manually:

1. If the record deck has a serial control switch, set it to Local.
2. Use the controls on the deck to start the videotape recording.
3. Play the sequence.