

FILM AND VIDEO WORKFLOWS

Acquisition

Always consider how you will exhibit

PICTURE	Aspect Ratio	Transfer rate
Dv/DvCam	720 x 576 pixels	3.6mb/sec = 5mins per Gb
16mm/ s16mm	est. 2k	
HDV	1440 x 1080 pixels	as DV editing native
HDCam	1920 x 1080 pixels	10bit compression 182mb/sec 1min =10Gb 8bit compression 121.5mb/sec 1miin =7Gb
2k/4k	2000 x 2000 pixels 4000 x 4000 pixels	
35mm/s35mm	est. 4k	

SOUND Tape/Hard disc

Resolution

The clarity, definition and detail that you see from an image is largely dictated by its *spatial resolution*. The more pixels the more definition, clarity and the larger you can project an image.

Resolution Comparison Film with HD



16mm



Super 16



HD



1.85 frame



Super 35mm

Dynamic range – the ability to see detail in the dark and light extremes – in film it is about 10 stops latitude. This allows great flexibility when grading and gives the possibility of bringing out detail in the shadows or highlights. In video it is easier to crush or burn out details in the extremes.

Colour Depth -film responds to light in a smooth way and changes in tone are unnoticeable with a huge array of colours possible. Digital formats need to create steps for each tonal change and every step has to be translated into data/numbers, this requires a lot of storage. The number of tonal “steps” possible in any digital image is measured in bit depth. It is a measurement of how many digital bits of information are used to store each primary colour channel: Red, Green and Blue. Where there are not enough steps an artifact called banding is created.

Post

Dv/DvCam	edit natively in FCP	
16mm/ s16mm	<ol style="list-style-type: none"> 1. telecine to DVCam, edit as above 2. telecine to digibeta/HDCam. Capture in offline quality (DV) to FCP via 3rd party board to retain TC. Edit. Online using FCP timeline or EDL, using master tapes. 	
HDV	<ol style="list-style-type: none"> 1. edit natively 2. Down convert from deck to DV Cam 3. Up convert to DVC Pro HD 	
HDCam	<ol style="list-style-type: none"> 1. capture to FCP in offline quality (DV) to FCP via 3rd party board to retain TC. Edit. Online using FCP timeline or EDL using master tapes. 	
35mm/s35mm	as with 16mm or use the DI process	

Offline/Online

Offline/ Online were originally video editing terms when video tape was edited using a linear process where selected pieces from one tape were copied onto another – one shot after another. If the order of shots needed to be changed it would be necessary to start again or copy lowering the picture quality. A log of the final cut would be used where the in and out timecode of each clip and its timecode position in the cut were noted and the master tapes (the highest quality) were used to re edit this was known as an online.

An offline allows you to edit with lower resolution copies of your master media and then recapture your footage at its full resolution (quality) in the online. The lower resolution files take up less hard disk space and can improve playback on slower computer processors.

An online allows the highest quality picture resolution, colour correction – grading, setting broadcast levels, VFX (visual effects), compositing, graphics etc.

By using an EDL or the FCP timeline of your final cut only the clips on the final locked timeline are recaptured into the computer at full resolution to conform your master material to the offline pattern of cuts.

EDL's Edit Decision Lists

Edl's save and restore timecode information for each edit and its position in a cut. They can be used to exchange edit information between editing systems.

An Edl contains the same basic clip info. as a FCP sequence.

A clip in an Edl is defined by a source reel (the reel number identified when capturing footage has to correspond to the labelled tape number) and has two pairs of timecode. The first describes the in and out points of the clip on the source tape. The second describes the timecode position of that clip on the timeline (sequence).

Digital Intermediate

In the past on a 35mm feature production, after the film has been processed a copy was made – an interpositive of the neg. The originals were not touched. From the intermediate positive copy another negative was struck to become the master and used for telecine for editing and vfx.

The film was edited and then by exporting an EDL of the edit the neg was cut and from this an answer print was made and graded and then another neg struck and from this 1000's of prints made. Every time a copy/neg or print is made there is some degradation due to the contact printing process which lowers the original resolution through slight loss of definition.

Now the current procedure is to still (if the budget is big enough) copy the neg for safe keeping. Then scan the copy at a very high resolution into a computer system making a **Digital Intermediate** Copies of the files can be made for the editor, sound, colour, grading and graphics, VFX shots can be imported at the editing stage as everyone is working from a digital neg. stored on a hard disk and does not go out of the digital terrain. Once the film is complete it can be simply transferred onto another digital format ready for digital projection or lasered back onto celluloid for the more conventional 35mm exhibition.

The advantage is that the negative is only scanned once and the master file can be used to produce unlimited prints. If a print is made from a negative the neg becomes worn and scratched after many prints have been made. After a D.I the only variables are the chemical film process and projection. If the final film stays as a digital file and is then projected on a perfectly calibrated digital projector the final piece that has been approved by the director, cinematography, production etc. should be identical.

To take full advantage of the DI stage and grading the picture (both film and video) has to be lit and shot in a particular way.

With A DI the material is scanned raw and then graded later. For the DOP to plan and understand how the image is going to eventually look there are various software packages that aid this – eg Kodak's Look Manager. So the DOP can start to almost grade as they shoot – 'the look' needs to be discussed with the TK dept and the grader well before the grade. With a DI it is easy to output to any format.

Back to basics ! If you **telecine at the University** and then re-telecine outside, the time - codes will be different making a re-conform difficult but not impossible. The first telecined tape can be used to edit your film. Then the neg re-telecined at a higher quality onto Dvcam and captured into the computer. The time code on the new telecine can be changed in FCP to help re insert your clips. For both telecines please capture your entire rushes as one clip. See notes on reinserting a telecine.

Less Basic

If you telecine your neg immediately at a post house you can either telecine everything to DVcam or to HDCam. You can then either call either of these formats your master tapes (with the HDCam you would need to edit offline downconverted to DV and then online at HD Cam resolution) – these you can grade at the University using Color – part of Studio 2 or you can export to tape and take this to a post house for a grade (they recapture from the tape). Or you can use the timecode (that the post house have logged in relation to the keycode on your negative – make sure you arrange this) of your final edit to produce an EDL which allows them to pull the specific shots you have used from the original negative and then grade them as they scan.

So plenty of alternative routes – your decision will usually be decided by money, so make sure you think about this in preproduction.