

Chapter 6

Video

Table of contents

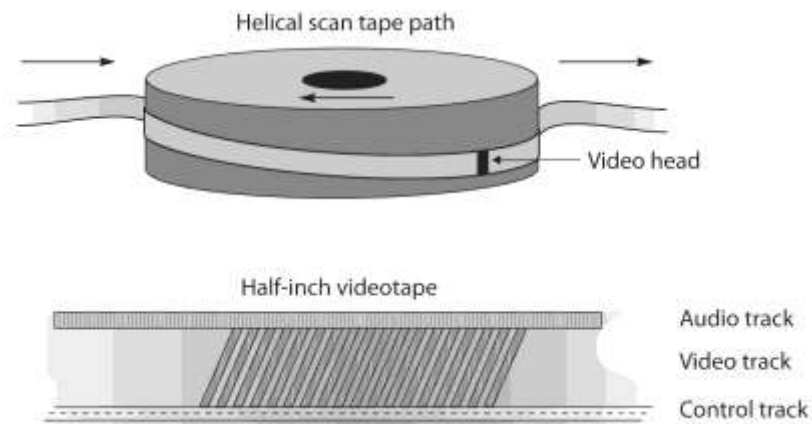
- Introduction to Video
- How Video Works
- Broadcast Video Standards
- Analogue Video and Digital Video
- Digital Video Containers
- Shooting and Editing Video
- Nonlinear Editing (NLE)
- Video production

∴ Introduction to Video

- Video is **an excellent tool** for delivering multimedia.
- Highest performance demands - memory and storage.
- Digital video has replaced analog
- Light reflected from an object through the camera's lens is converted into an electronic signal by a charge-coupled device (CCD).
- This electronic signal contains three channels of color information and synchronization pulses (sync).
- Several video standards exist that deal with the amount of separation between the components of the signal.

∴ How video works

- Analog video transfer methods:
 - **Component** video separates color and brightness over three cables.
 - **S-video** separates color and brightness over two wires.
 - **Composite** video transmits the whole video signal in a single cable.



- recorded onto magnetic tapes.
- Video frames are **interlaced**.

- **Digital video**

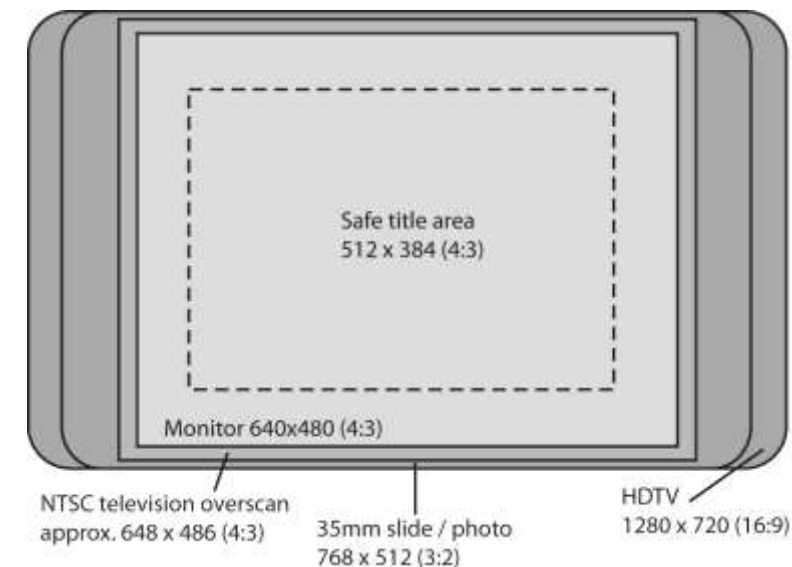
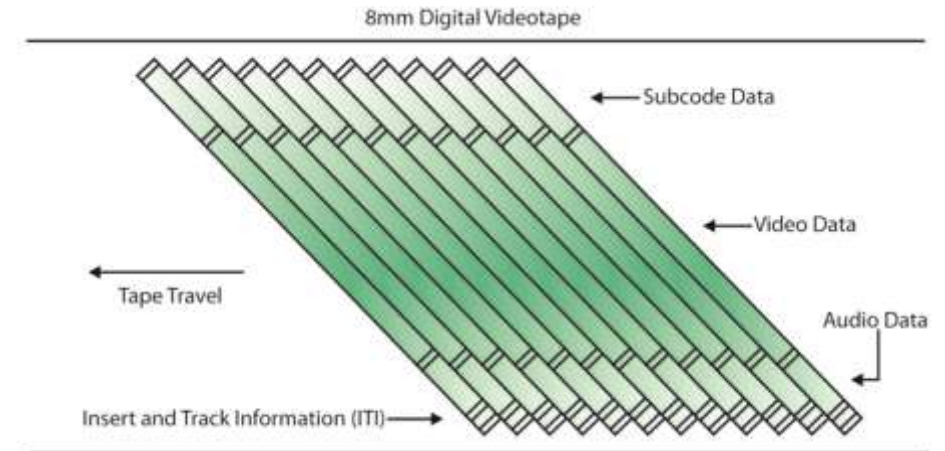
- The output is digitized by the camera into a sequence of single frames.

- The video and audio data are **compressed** before being written to a tape or digitally stored.

- Multiple HDTV formats exist.

- Resolutions and frame rates vary.

- The aspect ratio of HDTV is **16:9**.



- **CRT and LCD displays**

- Interlacing and progressive scan technologies

- Most computer video output is greater than 1024 x 768.

- **Overscan** and safe title area

- Every analog TV displays differently.

- Editing systems use action safe and title safe overlays.

- **Digital video architecture**

- Consists of a format **for encoding and playing back** video

- Includes a **player** that can recognize and play files created for that format.

.: Broadcast Video Standards

- **National Television Standards Committee** (NTSC) – Standard method for encoding information into an electronic signal that creates a television picture.
- It has a screen resolution of 525 horizontal scan lines and a scan rate of 30 frames per second.
- **Phase Alternate Line** (PAL) – PAL has a screen resolution of 625 horizontal lines and a scan rate of 25 frames per second.
- **Sequential Color and Memory** (SECAM) – has a screen resolution of 625 horizontal lines and is a 50 Hz system.
- SECAM differs from NTSC and PAL color systems in its basic technology and broadcast method



∴ Analogue Video and Digital Video

- Analogue – stored on tape/magnetic tape
- Digital – stored on digital storage



∴ Digital Video Containers

- **Codecs**

- The algorithm used to **compress** (code) a video for delivery.
- **Decodes** the compressed video (decompress) in real-time for fast playback.
- **Streaming** audio and video starts playback as soon as enough data has transferred to the user's computer to sustain this playback.
- MPEG is a real-time video compression algorithm.
- MPEG-4 includes numerous multimedia capabilities and is a preferred standard.
- Browser support varies.

∴ Digital Video Containers (cont.)

- Video format converters

- Produce more than one version of your video to ensure that video will **play on all** the devices and in all the browsers necessary for your project's distribution.

- Obtaining Video Clips

- New footage or stock footage?
- Training projects



.: Shooting and Editing Video

- A steady shooting platform should always be used.
- Use an external microphone.
- Know the features of your camera and software.
- Decide on the aspect ratio up front.

Converting 16:9 to 4:3



Original



Letterbox



Pan and Scan

Converting 4:3 to 16:9



Original



Pillars



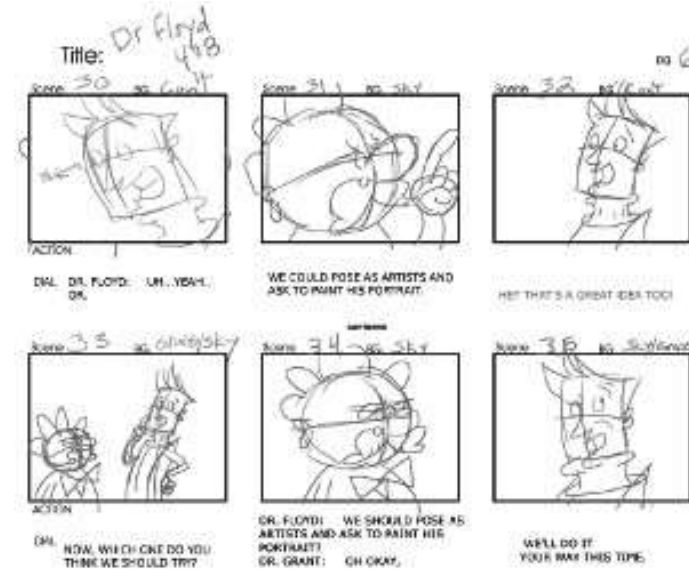
Zoom



Stretch

- **Storyboarding**

- Successful video production requires planning.



- **Lighting**

- Always strive for adequate lighting.



- **Chroma keys**

- Blue screen or chroma key editing is used to superimpose subjects **over different backgrounds**



- **Composition**

- Consider the delivery medium when composing shots.
 - Use close-up and medium shots when possible.
 - Move the subject, not the lens.
 - Beware of backlighting.
 - Adjust the white balance.

- **Titles and text (*continued*)**

- Use plain, sans serif fonts that are easy to read.
- Choose colors wisely.
- Provide ample space.
- Leave titles on screen long enough so that they can be read.
- Keep it simple.

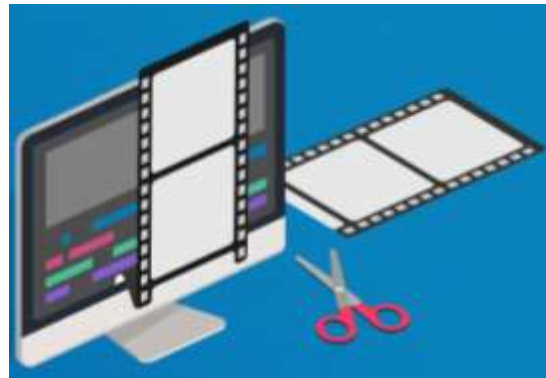
∴ Nonlinear Editing (NLE)

- High-end software has a steep learning curve.
- Adobe's Premiere, Apple's Final Cut, Avid's Media Composer
- Simple editing software is free with the operating system.
- Microsoft's Windows Live Movie Maker, Apple's iMovie.
- Remember video codecs are lossy; avoid re-editing.



.: Video production

- Shooting
- Editing
- Publishing



*Thank
you!*

