

Digital Video Containers

Digital video architecture is made up of an algorithm for compressing and encoding video and audio, a container in which to put the compressed data, and a player that can recognise and play back those files.



Common video containers

- Ogg (.ogg, Theora for video, Vorbis for audio)
- Flash video (.flv)
- MPEG (.mp4)
- QuickTime (.mov)
- Windows Media Format (.wmv)
- WebM (.webm)
- RealMedia (.rm)

Containers cntd.

Containers may include data compressed by a choice of codecs, and media players may recognise and play back more than one video file container format.

Container formats may also include **metadata**
- important information about the tracks contained in them.



CODECS

(Coder / decoder)

A codec is the algorithm (steps/formulas to solve problem) used to compress a video for delivery and then decode it in real time for fast playback.

Some codecs store only image data that changes from frame to frame instead of data that makes up every individual frame. Other predict pixel changes.

Lossy codecs - image quality is sacrificed to reduce file size.

MPEG

- MPEG standards developed by the **Moving Pictures Expert Group** (MPEG, www.mpeg.org)
- Using MPEG-1 (1992) you could deliver 1.2Mbps of video and 250 Kbps of two-channel stereo audio using CD-Rom technology.
- MPEG-2 (1994) became digital compression standard required for digital television (DTV) and for making DVDs

MPEG-4

- As a container MPEG-4 (1998-1999) offers indexing, hyperlinking, querying, browsing, uploading, downloading etc.)
- MPEG-4 can adjust to varied download speeds, making it an attractive option for delivery of video on the Web.

- the Theora video codec and the Vorbis audio codec in an Ogg container is both platform independent and widely available.
- it was hoped by web developers that this would be the standard with HTML 5 but they could only *suggest* it as other manufacturers not happy about it.

- Flash video container uses the older VP6 and a newer H.263 codec used on YouTube and at many websites but requires the Flash plugin to be installed in the user's browser.
- For playing WMV containers, Mac computers require installation of the Silverlight plugin, a Microsoft development framework similar to Flash.

- H.264 codec developed by MPEG is required in Blu-ray discs and used by YouTube, iTunes and some broadcast services.
- Google's open source VP8 codec works within the WebM container.

see p. 177 handout Codecs and Browser

Video format converters

- Be prepared to produce more than one version of your video (codecs in a container) to ensure that the video will play on all devices and in all the browsers necessary for your project's distribution.
- **DVD** video uses **MPEG-2** compression
- **Blu-ray** video discs used **MPEG-4 AVC** compression

Video format converters

- If you need to prepare a video file that will run on an iPod, a Droid, and an Atom based netbook, as well as in all web browsers, you will need to convert your material into multiple formats.
- *Handbrake* free shareware to convert to range of formats.

- <http://www.digitalfaq.com/guides/video/capture-understand-sources.htm>
- <http://www.digitalfaq.com/guides/video/introduction-encode-convert.htm>