C P Goenka International School
Learn Today, Lead Tomorrow

Glossary – Chap 10

Grade	AS Level	Subject	IT
Name			

Chap 10 - Sound and video editing

Word/phrase	*Meaning*
Video	
movie	This is often used to refer to the published video. In most circumstances, the terms video and movie are synonymous.
timeline/storyboard	A 'display' of the sequence of the video project, to include: title frames, snapshots, video clips, credit frames etc.
video frame	A video or movie frame is a single picture or still shot, that is shown as part of a larger video clip. Many single frames are run in succession to produce what appears to be a seamless piece of film or videotape. A frame can be selected on its own to create a snapshot.
playhead	The playhead is the vertical line that indicates the current position in the storyboard. It can be moved manually and used to set the start point and end point of a video clip
Snapshot	A single frame used as a still shot. This can be displayed for a selected duration.
video clip	A video clip is a small section of a larger video presentation. A series of video frames are run in succession to produce the final production. A compilation of video frames results in a video clip.
Transitions	Video transitions are the visual movements as one snapshot or video clip changes to another. Most video editing applications have a number of preset transitions such as mix, dissolve, cross fade, wipe or a simple cut from one clip to another.
visual effects	Video effects differ from video transitions. The effect is applied to the snapshot or clip rather than to the change from one snapshot or clip to another. There are many effects that are often available in video editing applications such as colour replacement, animated effects, pixelisation, blurring, lighting effects, etc.
aspect ratio	The width of a picture (or screen) in relation to its height. Ratios are expressed in the form 'width X height'. For example, a 4 : 3 ratio means the picture is 4 units wide by 3 units high. The actual physical size of the picture is irrelevant; the aspect ratio refers only to the relationship between width and height. The common ratios for video are 4 : 3 (standard), 16 : 9 (widescreen) or 21 : 9 (cinemascope).
titles	Text on standalone clips, frames or snapshots usually at the start of a movie.
caption	Text superimposed on video. Captions can be used to add context to a scene. They are also sometimes used for viewers who are hearing impaired and will describe what is being said, emotions and background sounds. Captions can also be used for indexing and retrieval.

credits	Opening or closing credits, in a movie, are shown at the beginning or the end of a movie and list the most important information about the production. They are usually shown as text superimposed on a blank screen or static pictures, or sometimes on top of action in the movie.
Audio	
sampling	The conversion of a sound wave (a continuous signal) to a sequence of samples (a discrete-time signal).
waveform	A visual representation of an audio signal or recording. It lets you see the changes in amplitude against time.
frequency	The number of complete waves or oscillations or cycles occurring in unit time (usually one second).
pitch	The frequency of a sound as perceived by the ear. A high pitch sound corresponds to a high frequency sound wave and a low pitch sound corresponds to a low frequency sound wave.
amplitude	The size of the vibration and this determines how loud the sound is.
fidelity	How close the digitised sound is to the original analog recording.
Monophonic recording	Single channel sound.
Stereophonic recording	Two (or more) channel sound.
CODECs	The compression of a recording and the *decompression* for playing back a recording is done by CODECs (coder–decoder).

Video

There are following three important types of video editing:

- linear video editing, using tape to tape technology
- non-linear editing system (NLE), using computers with video editing software
- vision mixing, when working within live television and video production environments.

The video settings chosen determine the quality and file size of the published movie file. The file type, resolution and bit rate depend on the medium on which the movie is to be shown.

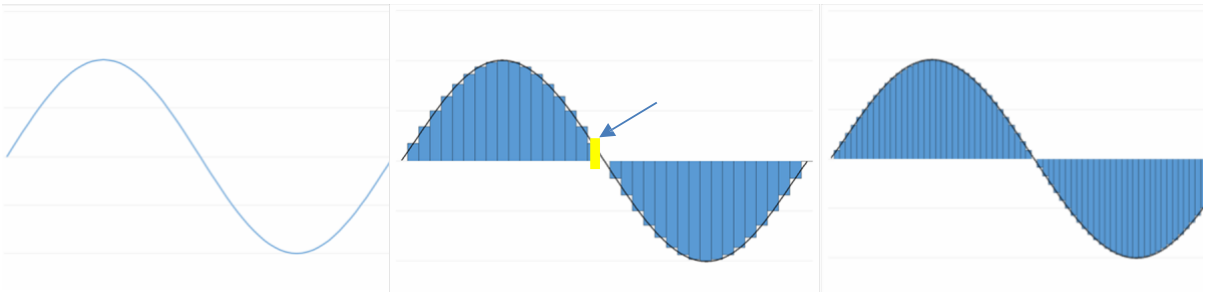
Medium	**Resolution**	**Bit rate**	**Recommended use**	**Typical file size per minute of video**
HD display	1920 x 1080 widescreen	25 Mbps	This setting produces the highest quality output in most situations. Because the quality is so high, files saved using this setting are larger than files saved at most other settings.	173 MB
Portable Device	960 x 720	10 Mbps	This setting is suitable for a portable device like a tablet or smart phone.	73 MB
PC	640 x 480	6 Mbps	This setting produces good-quality standard definition movies.	41 MB
Email	320 x 240	2 Mbps	This setting could keep the file size small enough for attaching to an email.	11 MB

Audio

Sounds are transmitted through the air as changes in air pressure. These pressure changes are smooth and continuous. This is analog data. Computers and most other modern audio processing equipment can only use digital data.

Analog signals are sampled to create digital data. The 'sampling rate' (how many times a second the analog signal is measured), determines the 'fidelity' of the sound and the size of the digital file. Higher sample rates will mean bigger file sizes but it is not just the number of samples that matter. Each single sample has a 'bit depth', which is the number of bits of information in each sample. This directly corresponds to the resolution of each sample.

Examples of bit depth include Compact Disc Digital Audio, which uses 16 bits per sample and DVD-Audio and Blu-ray Disc, which supports up to 24 bits per sample.



A single sample. *Sampled sound wave* *Sound wave*

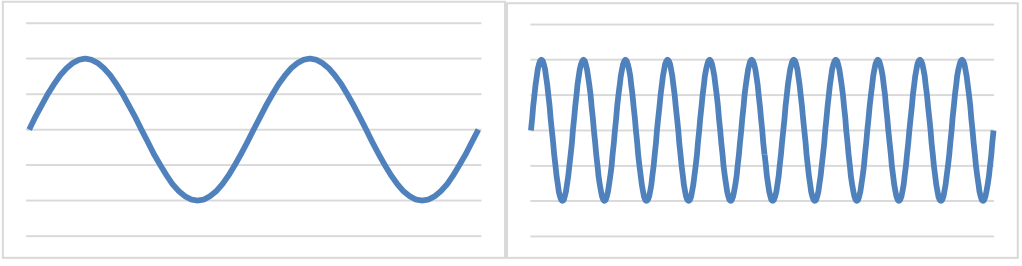
Sample data higher rate.

'Pure' analogue sound wave.

This digitization is carried out by analog-to-digital Conversion (ADC). After you have edited a digital file, the computer will use a digital-to-analog Conversion (DAC) to convert it to a (relatively) smooth analog waveform that drives your speakers. There is some more important theory work on sampling but these ideas are enough to get us started with the practical work. For all practical work on this topic you will be using digital audio files. Before you start, there are a few other terms like frequency, pitch and amplitude you need to consider.

Frequency

The frequency is the number of peaks and troughs per second and is given as cycles per second – Hz; pronounced Hertz. The average human ear can hear sounds as low as 20 Hz and as high as 20 kHz (20 000 Hz). This is known as the audible range.



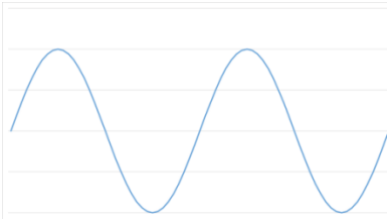
Low frequency *Higher frequency*

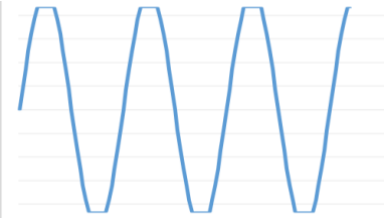
Pitch

We use the word pitch to compare sounds. We perceive higher frequency sounds as higher in pitch.

Amplitude

The height of the sound wave reflects the strength or power of the sound. We call this the amplitude. Higher amplitudes result in higher volumes. This is why we call a device that increases volume an amplifier.





When an amplifier tries to increase the amplitude beyond its limits, the waveform is 'clipped'. Clipping produces a distortion, which is one of the 'effects' that rock guitarists often use.

There are three major groups of audio formats:

- uncompressed
- lossless compression
- lossy compression.

Uncompressed formats like .WAV give pure digital sound as recorded. However, the files can be very large. Five minutes of WAV audio can need 40 to 50 mb of storage.

Files saved with *Lossless compression* like .FLAC files are still the sound as recorded but the compression algorithm allows some parts of the file to be stored as coded data, saving some file space.

Files saved with *lossy compression* like .MP3 have some audio information removed and the data is simplified. This does result in some loss of quality but clever algorithms only remove the parts of the sound that have the least effect on the sound we can hear.