

Digital Audiovisual Properties

Basics

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Overview

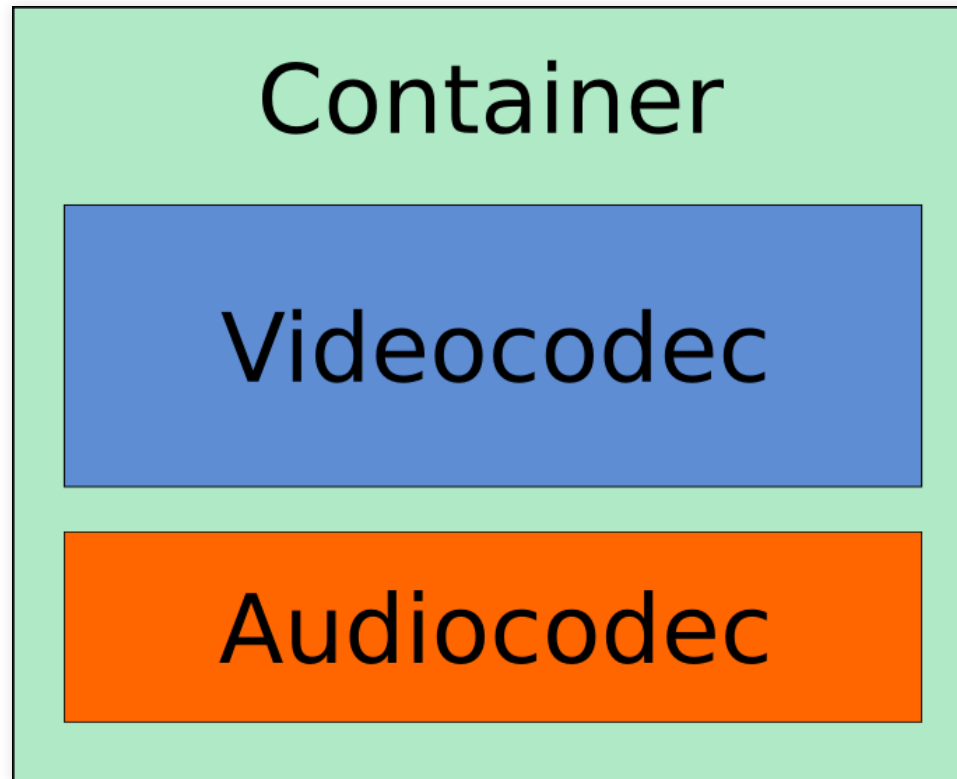
- Format naming
- Image resolution
- Framerate (fps)
- Audio: Samplerate
- Audio: Bit-depth

Video Formats

Which ones do you already know/use?

The "Trinity"

of digital video



Suffix = Container

Statements like "*The videos are in Flash/AVI/MOV format*" or "*The camera creates MP4*" usually **only** say something about the container format.

Why 'Trinity'?

*1 video file $\geq$ 3 formats.
Better would be to name all 3
components.*

Better Naming Style

- H.264 / AAC in MP4
- XviD / MP3 in AVI
- FFV1 / PCM in MKV

FourCC

*"Is short for '**four character code**' -
an identifier for a video codec,
compression format, color or pixel format
used in media files.*

FourCC

- Website: fourcc.org
- [List of codecs](#)
- [Uncompressed YUV](#)
- [Uncompressed RGB](#)

FourCC

Examples

- **FFV1** = FFV1
- **v210** = V210
- **XviD** = XVID
- **DV25** = DVCPPro
- **DV50** = DVCPPro 50
- **MJ2C, LCW2, LJ2K** = MJPEG 2000
- **X264** = H.264
- ...

Format Naming

Real-life Status Quo

Example "MPEG-4"

Source: [The MPEG-4 Confusion](#)

- MPEG-4 video
- MPEG-4 audio
- .mp4
- .m4v
- .m4a
- .m4p
- MPEG-4 Flash video
- MPEG-4 (AVI)
- AAC / .aac
- H.264
- DivX
- XviD
- QuickTime
- BluRay
- Apple Lossless (ALAC/ALE)
- MPEG-4 SP (Simple Profile)
- MPEG-4 ASP (Advanced Simple Profile)
- MPEG-4 SStP (Simple Studio Profile)
- MPEG-4 AVC (Advanced Video Coding)
- H.263
- ...

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- ...

Source: [MAGIX product website](#) (Feb.2015)

VIDEO

	Import	Export
AVI	✓	✗
DV-AVI	✓	✗
MPEG-1	✓	✗
MPEG-2	✓	✗
MXV	✓	✗
MOV	✓	✗
WMV(HD)	✓	✓

AUDIO

	Import	Export
MP3	✓	✗
OGG	✓	✗
WMA	✓	✗

Source: [MAGIX Produkt-Website](#) (Okt.2016)

VIDEOFORMATE

	Import	Export
(DV-)AVI	✓	✗
M2TS	✓	✓
MJPEG	✓	✗
MKV	✓	✗
MOV	✓	✗
MXV	✓	✗
VOB	✓	✓
WMV	✓	✗

VIDEOCODECS

	Import	Export
H.264	✓	✗
MPEG-1	✓	✗
MPEG-2***	✓	✓
MPEG-4***	✓	✓

Image Resolution

- = Width * Height
- In Pixel (px)

Important Resolutions

Pixel	Norm
720 x 486	NTSC SD
720 x 576	PAL SD
1280 x 720	HD-Ready
1920 x 1080	Full-HD
4096 x 2160	4k Digital Cinema

See also: [Image Resolution \(Wikipedia\)](#)

Per Video Format

Pixel	Norm
500 x 480	Digital8
720 x 480	NTSC (DVD, miniDV, DigiBeta)
720 x 576	PAL DVD, miniDV, Digital8, DigiBeta
1280 x 720	HD DVD, Blu-ray, HDV
1440 x 1080	HDV (anamorph)
1920 x 1080	HDV, AVCHD, HD DVD, Blu-ray, HDCAM SR

Links

- [Display resolution \(Wikipedia\)](#)
- [Image resolution / Pixel resolution \(Wikipedia\)](#)

Framerate

- Images (=Frames) Per Second (FPS)



Framerates

- PAL / SECAM: 25 fps
- NTSC: $30000/1001 = \text{ca. } 29.97 \text{ fps}$

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$$\text{fps} = \text{AC frequency} / 2$$

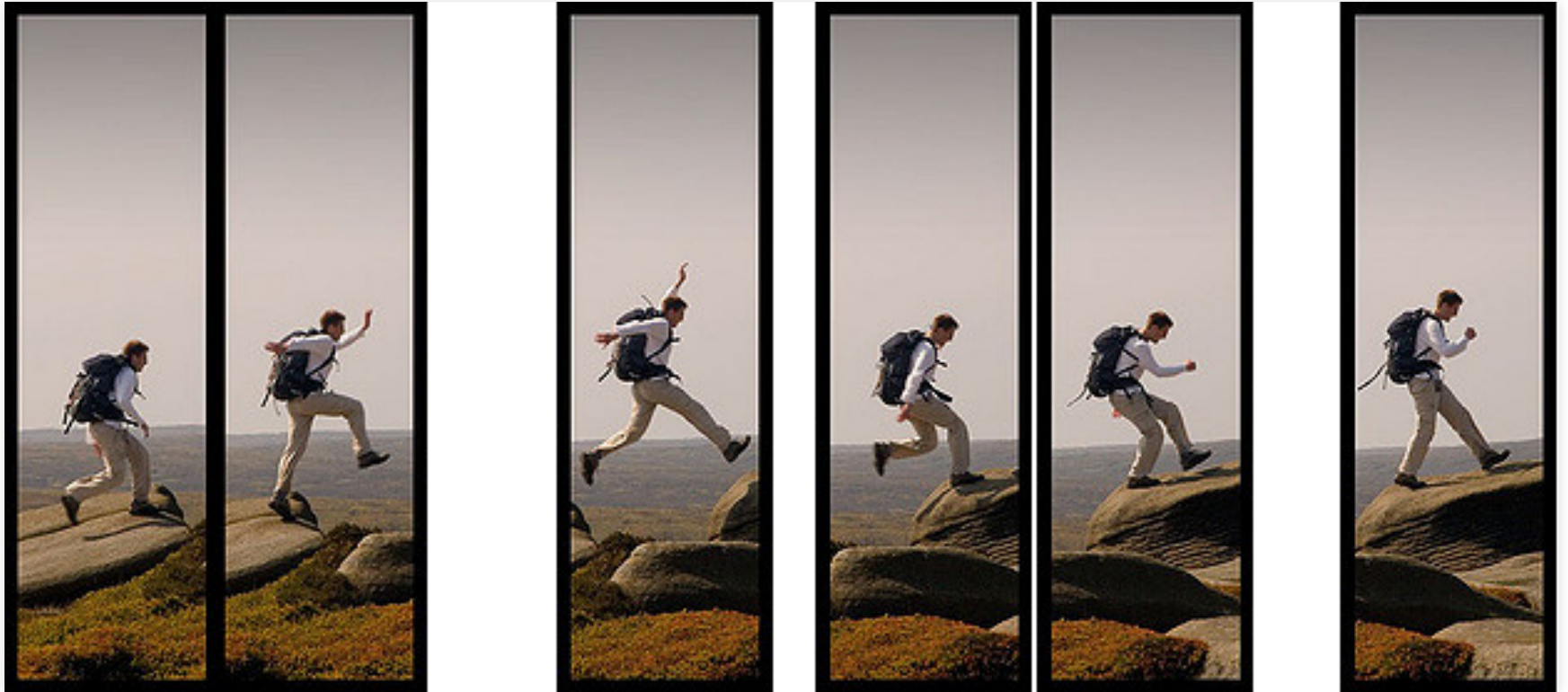
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Thanks AEG for 50Hz! ;)

Variable Framerate



Variable Framerate

- No constant image frequency
- Each frame has individual display duration
- Was rather uncommon...
- ... but came back increasingly with mobile equipment.
- Produces "*unusual*" frame rates when checking (because average)

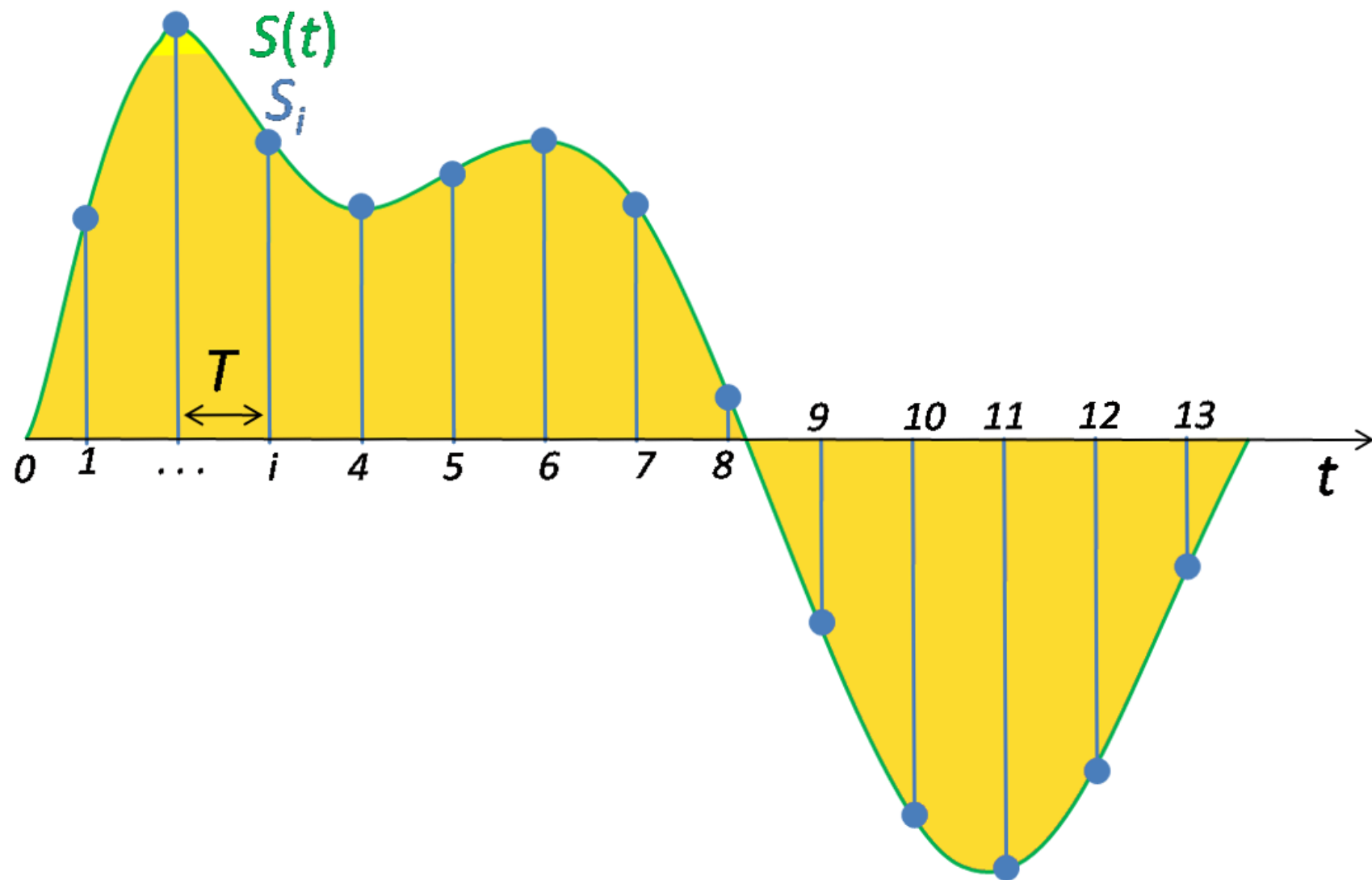
Links

- [Frame rate \(Wikipedia\)](#)
- [Variable frame rate \(Wikipedia\)](#)

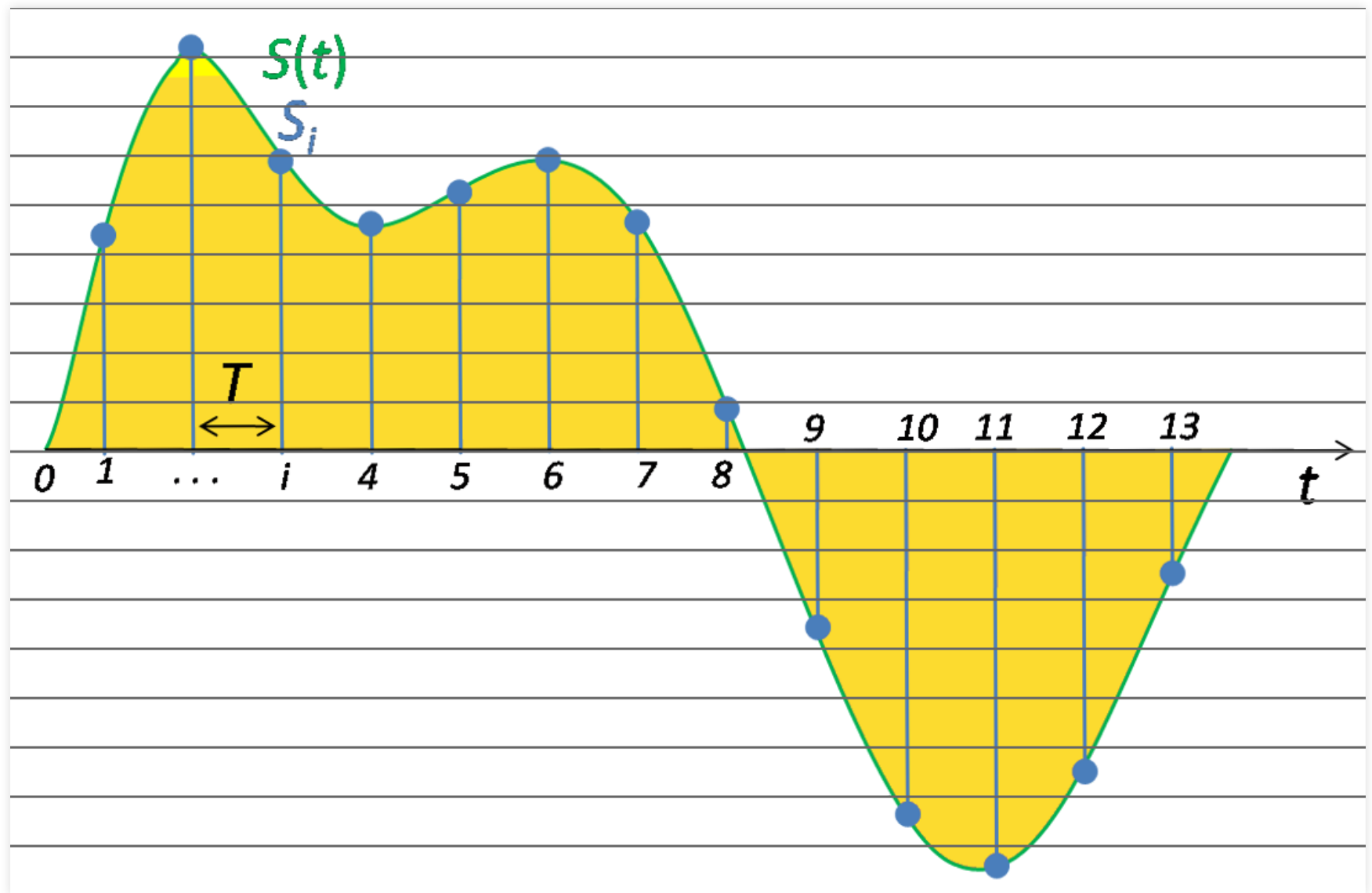
Audio

- Samplerate
- Bits per sample (bit depth)
- Channels

Samplerate



Bits per Sample



Hertz? kHz?

Samplerate is given as frequency:

Hertz (Hz) / Kilohertz (kHz)

Common Samplerate & Bits

Rate (Hz)	Bits	Application
11025	8	
44100	16	
48000	24	
96000	32	

Links

- [Sampling \(Wikipedia\)](#)
- [Audio bit depth \(Wikipedia\)](#)

Questions?

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