

1. SIGNAL FUNDAMENTALS

Aspect ratio. Width:height. Cinema 2.39:1, TV 16:9, vertical 9:16.

Bitrate. Data per second. 4K HDR ~15-25 Mbps.

CFR. Constant Frame Rate. Required by editors.

VFR. Variable Frame Rate. Phones often produce VFR.

Pixel. Smallest coloured dot. 4K = 3,840 x 2,160.

Resolution. Pixels per frame. 1080p / 4K / 8K.

Progressive. Every frame has every line. Modern default.

Sampling. Discrete measurements of continuous signal.

2. COLOUR

BT.709. HDTV / SDR colour space. ~35% visible.

BT.2020. UHD / HDR colour space. ~76% visible.

DCI-P3. Cinema / Apple gamut. ~53% visible.

Chroma 4:2:0. Half-resolution colour, full luma.

RGB. Red/Green/Blue. Camera & display internal.

YCbCr (YUV). Luma + 2 colour-diff channels. Codec format.

3. BRIGHTNESS / HDR

Nit. Brightness unit (cd/m²). SDR 100 / HDR 1,000+.

SDR. 100-nit, gamma, Rec. 709. Legacy default.

HDR. 1,000-10,000 nit. 10-bit min, wide gamut.

Bit depth. Bits per channel. 8 / 10 / 12. HDR >= 10.

Banding. Visible steps. Symptom of low bit depth.

Transfer fn. Signal <-> brightness curve.

Gamma. SDR curve. BT.1886 = gamma 2.4.

PQ. ST 2084. HDR absolute brightness.

HLG. B67. HDR with SDR fallback.

OETF / EOTF. Camera curve / display curve.

HDR10. Open baseline. Static MaxCLL/MaxFALL.

HDR10+. Royalty-free dynamic (ST 2094-40).

Dolby Vision. 12-bit licensed dynamic (ST 2094-10).

4. TIME

Frame rate. 24 cinema, 25/50 EU, 30/60 NA, 120 premium.

HFR. High Frame Rate cinema (48-120 fps).

Interlaced. Odd/even lines alternating (1080i). Legacy.

Judder. Stutter when fps & refresh mismatch.

3:2 pulldown. 24 fps on 60 Hz - causes judder.

Motion blur. Object smear within frame. Saves low fps.

Shutter angle. Frame fraction shutter open. 180 deg default.

5. METADATA / TAGGING

color primaries. Colour space tag. bt709 / bt2020.

color transfer. Transfer fn tag. bt709 / smpte2084 / b67.

color space. RGB->YCbCr matrix. bt709 / bt2020nc.

MaxCLL. Brightest pixel in HDR10 title (nits).

MaxFALL. Brightest avg frame in HDR10 (nits).

SMPTE ST 2094. Dynamic-metadata family. -10 DV, -40 HDR10+.

6. CODECS / CONTAINERS

Codec. Compression algorithm. H.264, HEVC, AV1.

Container. File wrapper. MP4, MKV, WebM, TS.

H.264 (AVC). Universally supported. Ratified 2003.

HEVC (H.265). ~50% better than H.264. Required for UHD.

HEVC Main10. HEVC 10-bit profile. Required for HDR.

AV1. Open royalty-free. 30-50% better than HEVC.

VVC (H.266). Next-gen 2020. Mostly broadcast.

7. DELIVERY / QUALITY

ABR. Adaptive Bitrate Streaming.

CDN. Content Delivery Network edges.

CRF. Constant Rate Factor. Quality-target encode.

HLS. Apple's ABR. iOS / Safari default.

DASH. Non-Apple ABR standard. MPD manifests.

VMAF. Netflix perceptual quality score 0-100.