Glossary

video terms and acronyms

Tektronix

Enabling Innovation

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▶ 1-9

0H – The reference point of horizontal sync. Synchronization at a video interface is achieved by associating a line sync datum, 0H, with every scan line. In analog video, sync is conveyed by voltage levels "blacker-than-black". 0H is defined by the 50% point of the leading (or falling) edge of sync. In component digital video, sync is conveyed using digital codes 0 and 255 outside the range of the picture information.

0V – The reference point of vertical (field) sync. In both NTSC and PAL systems the normal sync pulse for a horizontal line is 4.7 µs. Vertical sync is identified by broad pulses, which are serrated in order for a receiver to maintain horizontal sync even during the vertical sync interval. The start of the first broad pulse identifies the field sync datum, 0_V.

1/4" Phone – A connector used in audio production that is characterized by its single shaft with locking tip.

1/8th Mini – A small audio connector used frequently in consumer electronics.

1:1 – Either a perfectly square (9:9) aspect ratio or the field:frame ratio of progressive scanning.

100 Field Per Second – Field rate of some European proposals for a world standard for ATV (Advanced Television).

100% Amplitude, 100% Saturation – Common reference for 100/7.5/100/7.5 NTSC color bars.

100/0/75/7.5 – Short form for color bar signal levels, usually describing four amplitude levels.

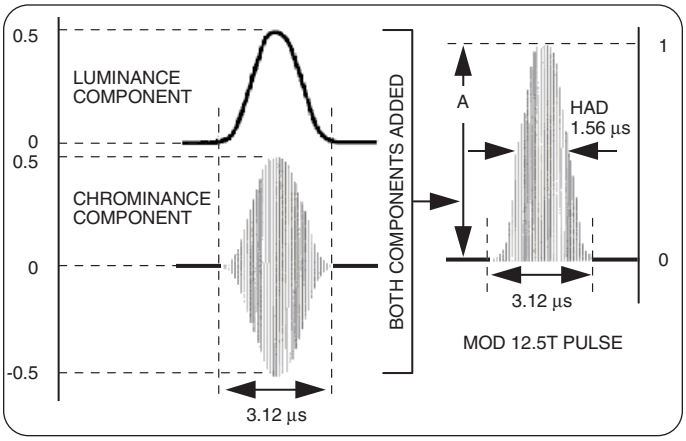
1st number: white amplitude
2nd number: black amplitude
3rd number: white amplitude from which color bars are derived
4th number: black amplitude from which color bars are derived

In this example: 75% color bars with 7.5% setup in which the white bar has been set to 100% and the black to 0%.

1080i – 1080 lines of interlaced video (540 lines per field). Usually refers to 1920 x 1080 resolution in 1.78 aspect ratio.

1080p – 1080 lines of progressive video (1080 lines per frame). Usually refers to 1920 x 1080 resolution in 1.78 aspect ratio.

12.5T Sine-Squared Pulse with 3.579545 MHz Modulation – Conventional chrominance-to-luminance gain and delay measurements are based on analysis of the baseline of a modulated 12.5T pulse. This pulse is made up of a sine-squared luminance pulse and a chrominance packet with a sine-squared envelope as shown in the figure below. This waveform has many advantages. First it allows for the evaluation of both gain and delay differences with a single signal. It also eliminates the need to separately establish a low-frequency amplitude reference with a white bar. Since a low-frequency reference pulse is present along with the high-frequency information, the amplitude of the pulse itself can be normalized. The HAD of 12.5T was chosen in order to occupy the chrominance bandwidth of NTSC as fully as possible and to produce a pulse with sufficient sensitivity to delay distortion.



125M – See SMPTE 125M.

1410 NTSC Test Signal Generator – Discontinued analog circuit based Tektronix test signal generator that is used to generate full field composite analog test signals. Has been replaced by the Tektronix TSG-170A.

1450 Demodulator – Tektronix high quality demodulator that provides envelope and synchronous demodulation.

1480 Waveform Monitor – Discontinued Tektronix waveform monitor. It has been replaced by the 1780R.

16 QAM – (16 Quadrature Amplitude Modulation)

16 VSB – Vestigial sideband modulation with 16 discrete amplitude levels.

16 x 9 – A widescreen television format in which the aspect ratio of the screen is 16 units wide by 9 high as opposed to the 4 x 3 of normal TV.

1780R Waveform Monitor/Vectorscope – Tektronix microprocessor controlled combination waveform monitor and vectorscope.

1910 Digital Generator/Inserter – Tektronix VITS test signal generator.

1-H – Horizontal scan line interval, usually 64 µs for PAL or 63.5 µs for NTSC.

2:1 – Either an aspect ratio twice as wide as it is high (18:9) or the field:frame ratio of interlaced scanning.

2:2 Pull-Down – The process of transferring 24-frames/sec film format into video by repeating each frame as two video fields.

2:3 Pull-Down – See Pull-Down.

2-1/2D (Two and One-Half Dimensions) – This term refers to the kind of dimensionality (i.e., 2D, 3D) that can be created using multiplane animation. Since a layer in such animation can lie in front of one cel (or plane), or in back of another layer, the resulting effect is of a 3 dimensional world. This is a limited 3D world, however, because the layers are fixed in relation to each other. For this reason, multiplane animation is referred to as 2-1/2 dimensions. It is a very useful technique, however, even for computer graphics, because by ordering the layers in the way a painter does, you

can save the computer the need to compare objects that are in different layers (that is, compare them for purposes of hidden surface removal).

24 Frames Per Second – International standard for motion picture film shooting and projection, though film shot for television in 625 scanning-line countries is usually shot at 25 frames per second (even if not, it is transferred to television at 25 frames per second). There are moves afoot in the U.S. to increase the film frame rate to 30 for improved temporal resolution. The ImageVision HDEP system and other electronic cinematography systems use 24 frames per second. RCA once proposed an electronic cinematography system with 2625 scanning lines (2475 active), a 2:33:1 aspect ratio, and a frame rate of 23.976023 frames/sec.

24-Bit Color – Color for which each red, green and blue component stores 8 bits of information. 24-bit color is capable of representing over one million different variations of color.

25 Frames Per Second – Frame rate of television in all countries not conforming to CCIR system M (NTSC). Also the frame rate of film shot for television in those countries.

25 Hz HDTV Bitstream – A bitstream which contains only Main Profile, High Level (or simpler) video at 25 Hz or 50 Hz frame rates.

25 HZ HDTV IRD – An IRD (Integrated Receiver Decoder) that is capable of decoding and displaying pictures based on a nominal video frame rate of 25 Hz or 50 Hz from MPEG-2 Main Profile, High Level bitstreams, in addition to providing the functionality of a 25 Hz SDTV IRD.

25 Hz SDTV Bitstream – A bitstream which contains only Main Profile, Main Level video at 25 Hz frame rate.

25 Hz SDTV IRD – An IRD (Integrated Receiver Decoder) which is capable of decoding and displaying pictures based on a nominal video frame rate of 25 Hz from MPEG-2 Main Profile, Main Level bitstreams.

29.97 Frames Per Second – Frame rate of NTSC color television, changed from 30 so that the color subcarrier could be interleaved between both the horizontal line frequency and the sound carrier.

2K – A film image scanned into a computer file at a resolution of 2048 horizontal pixels per line.

2T Pulse – See the discussion on Sine-Squared Pulses.

3.579545 MHz – This is the frequency of the NTSC color subcarrier.

3:2 Pull-Down – a) The technique used to convert 24 frames per second film to 30 frames per second video. Every other film frame is held for 3 video fields resulting in a sequence of 3 fields, 2 fields, 3 fields, 2 fields, etc. **b)** A frame cadence found in video that has been telecined or converted from film to video. This cadence is produced because the frame rates for film and video are different. During the process of compression, some compression hardware recognizes this cadence and can further compress video because of it. Material which is video to start with gains no extra compression advantage. Material edited after being telecined may not gain a compression advantage.

30 Frames Per Second – Frame rate of NTSC prior to color. Frame rate of the ATSC/SMPTE HDEP standard. A potential new film standard.

30 Hz HDTV Bitstream – A bitstream which contains only Main Profile, High Level (or simpler) video at 24000/1001, 24, 30000/1001, 30, 60/1001 or 60 Hz frame rates.

30 Hz HDTV IRD – An IRD (Integrated Receiver Decoder) that is capable of decoding and displaying pictures based on nominal video frame rates of 24000/1001, 24, 30000/1001, 30, 60/1001 or 60 Hz from MPEG-2 Main Profile, High Level bitstreams, in addition to providing the functionality of a 30 Hz SDTV IRD.

30 Hz SDTV Bitstream – A bitstream which contains only Main Profile, Main Level video at 24000/1001, 24, 30000/1001 or 30 Hz frame rate.

30 Hz SDTV IRD – An IRD (Integrated Receiver Decoder) which is capable of decoding and displaying pictures based on a nominal video frame rate of 24000/1001 (approximately 23,98), 24, 3000/1001 (approximately 29,97) or 30 Hz from MPEG-2 Main Profile at Main Level bitstreams.

3D (Three Dimensional) – Either as in stereoscopic television (NHK has suggested alternating 3DTV transmissions with HDTV), or more often, when referring to ATV, relating to the three dimensions of the spatio-temporal spectrum: horizontal, vertical, and time.

3D Axis (Menu) – The 3D function that moves the image away from the center of rotation. The image can be moved along, or off any of the three axes.

3D Space – Three dimensional space is easily imagined by looking at a corner of a rectangular room. The corner is called the origin. Each edge leaving from the origin (there are three of them) is called an axis. Each axis extends infinitely in two directions (up/down, left/right, and front/back). Imagine laying long measuring sticks on each axis. These are used to locate specific points in space. On the Cubicomp, or any other graphics systems, the yardsticks are not infinitely long, and 3D space on these devices is not infinite; it is more like an aquarium.

3-Perf – A concept for saving money on film stock by shooting each 35 mm frame in an area covered by three perforations rather than four. The savings is more than enough to compensate for switching from 24 frames per second to 30. Three-perf naturally accommodates a 1.78:1 (16:9) aspect ratio and can be easily masked to the 1.85:1 common in U.S. movie theaters. It changes the shoot-and-protect concept of using theatrical film on television, however, from one in which the protected area is extended vertically to one in which the shooting area is reduced horizontally.

3XNTSC – A Zenith proposal for an HDEP scheme that would use three times as many scanning lines as NTSC (1575), but would otherwise retain NTS characteristics. It is said to allow easy standards conversion to 525- or 625-scanning line systems and to accept material shot in 1125 scanning lines in a 16:9 aspect ratio without difficulty. 3XNTSC would have 1449 active scanning lines, 2:1 interlace, a 4:3 aspect ratio, and a bandwidth of 37.8 MHz.

4:1:1 – 4:1:1 indicates that Y' has been sampled at 13.5 MHz, while Cb and Cr were each sampled at 3.375 MHz. Thus, for every four samples of Y', there is one sample each of Cb and Cr.

4:2:0 – a) A sampling system used to digitize the luminance and color difference components (Y, R-Y, B-Y) of a video signal. The four represents the 13.5 MHz sampling frequency of Y, while the R-Y and B-Y are sampled at 6.75 MHz – effectively between every other line only. **b)** The component digital video format used by DVD, where there is one Cb sample and one Cr sample for every four Y samples (i.e., 1 pixel in a 2 x 2 grid). 2:1 horizontal downsampling and 2:1 vertical downsampling. Cb and Cr are sampled on every other line, in between the scan lines, with one set of chroma samples for each two luma samples on a line. This amounts to a subsampling of chroma by a factor of two compared to luma (and by a factor of four for a single Cb or Cr component).

4:2:0 Macroblock – A 4:2:0 macroblock has four 8 x 8 blocks of luminance (Y) and two 8 x 8 blocks of chrominance (one block of Cb and one block, of Cr).

4:2:2 – a) A commonly used term for a component digital video format. The details of the format are specified in the ITU-R BT.601 standard document. The numerals 4:2:2 denote the ratio of the sampling frequencies of the single luminance channel to the two color difference channels. For every four luminance samples, there are two samples of each color difference channel. **b)** ITU-R BT.601 digital component waveform sampling standard where the luminance signal is sampled at the rate of 13.5 MHz, and each of the color difference signals, (Cr and Cb) are sampled at the rate of 6.25 MHz each. This results in four samples of the luminance signal for each two samples of the color difference signals. See ITU-R BT.601-2.

10 Bit Y Sample	10 Bit C_r Sample	10 Bit Y Sample	10 Bit C_b Sample	10 Bit Y Sample	10 Bit C_r Sample	10 Bit Y Sample	10 Bit C_b Sample

4:2:2 Profile at Main Level – An MPEG-2 profile that benefits the needs of video contribution applications. Features include high-chrominance resolution.

4:2:2:4 – Same as 4:2:2 with the addition of a key channel sampled at the same frequency as the luminance.

4:2:2p (Professional Profile) – 4:2:2p refers to a higher quality, higher bitrate encoding designed for professional video usage. It allows multiple encodings/decodings before transmission or distribution.

4:3 – The aspect ratio of conventional video, television and computer screens.

4:4:4 – A sampling ratio that has equal amounts of the luminance and both chrominance channels.

4:4:4:4 – Same as 4:2:2 with the addition of a key channel, and all channels are sampled at the same frequency as the luminance.

45 Mbps – Nominal data rate of the third level of the hierarchy of ISDN in North America. See also DS3.

480i – 480 lines of interlaced video (240 lines per field). Usually refers to 720 x 480 (or 704 x 480) resolution.

480p – 480 lines of progressive video (480 lines per frame). 480p60 refers to 60 frames per second; 480p30 refers to 30 frames per second; and 480p24 refers to 24 frames per second (film source). Usually refers to 720 x 480 (or 704 x 480) resolution.

4C – The four-company entity: IBM, Intel, Matsushita, Toshiba.

4fsc – Composite digital video as used in D2 and D3 VTRs. Stands for 4 times the frequency of subcarrier, which is the sampling rate used. In NTSC 4FSC is 14.3 MHz and in PAL it is 17.7 MHz.

4K – A film image scanned into a computer file at a resolution of 4096 horizontal pixels per line. 4K is considered to be a full-resolution scan of 35 mm film.

5.1 Channel Audio – An arrangement of five audio channels (left, center, right, left-surround and right-surround) and one subwoofer channel.

50 Fields Per Second – Field rate of 25 frame-per-second interlaced television.

520A Vectorscope – Discontinued Tektronix vectorscope. It has been replaced by the 1780R.

525/60 – Another expression for NTSC television standard using 525 lines/frame and 60 fields/sec.

59.94 Fields Per Second – Field rate of NTSC color television.

5C – The five-company entity: IBM, Intel, Matsushita, Toshiba, Sony.

60 Fields Per Second – Field rate of the ATSC/SMPTE HDEP standard.

60 Frames Per Second – Frame rate of Showscan and some progressively scanned ATV schemes.

601 – See ITU-R BT.601-2.

625/50 – Another expression for PAL television standard using 625 lines/frame and 50 fields/sec.

720p – 720 lines of progressive video (720 lines per frame). Higher definition than standard DVD (480i or 480p). 720p60 refers to 60 frames per second; 720p30 refers to 30 frames per second; and 720p24 refers to 24 frames per second (film source). Usually refers to 1280 x 720 resolution in 1.78 aspect ratio.

75% Amplitude, 100% Saturation – Common reference for 75/7.5/75/7.5 NTSC/EIA color bars.

75%/100% Bars – See Vectorscope.

8 mm – A compact videocassette record/playback tape format which uses eight millimeter wide magnetic tape. A worldwide standard established in 1983 allowing high quality video and audio recording. Flexibility, lightweight cameras and reduced tape storage requirements are among the format's advantages.

8 PSK (8 Phase Shift Keying) – A variant of QPSK used for satellite links to provide greater data capacity under low-noise conditions.

8 VSB – Vestigial sideband modulation with 8 discrete amplitude levels, used in the ATSC digital television transmission standard.

8/16 Modulation – The form of modulation block code used by DVD to store channel data on the disc. See Modulation.

▶ A

A – Abbreviation for Advanced.

A and B Cutting – A method of assembling original material in two separate rolls, allowing optical effects to be made by double printing.

A and B Rolls, Tape – Separation of material into two groups of reels (A rolls and B rolls), with alternate scenes on each reel pair (A reel and B reel) to allow transitions between reels.

A Bus – The top row of the two rows of video source select buttons associated with a given M/E.

A Bus Keyer – A keyer that appears only on top of an "A" bus background video on an M/E.

A/A (A/X/A) Roll Editing – Editing from a single source using effects to transition from the source to itself (source "A" to "A") using a picture freeze at the end of one scene to transition the start of the next scene.

A/B Roll – a) Creating fades, wipes and other transitions from one video source to another. **b)** Typically, A/B roll is an editing technique where scenes or sounds on two source reels (called Roll A and Roll B) are played simultaneously to create dissolves, wipes and other effects. On nonlinear editing systems, A/B roll refers to using two source streams (.avi,.wav,.tga and so on) to create an effect.

A/B Roll Editing – Editing from two source VCRs ("A" and "B") to a third (recording) VCR. Typically a switcher or mixer, such as the Digital Video Mixer, is used to provide transition effects between sources. Control over the machines and process can be done manually or automatically using an edit controller.

A/B Roll Linear Editing – Recording edits from two video sources, such as two VCRs to a third, to achieve transition effects. See also, B-Roll.

A/D – See A-to-D Converter.

A/V (Audio/Video) – Frequently used as a generic term for the audio and video components and capabilities in home entertainment system and related product descriptions and reviews.

A/V Drive (Audio/Video Drive) – A high-end hard drive capable of storing high-bandwidth (i.e., high data rate) audio/video data.

A/V Edit – An edit that records new audio and video tracks. Also called Straight Cut.

A/V Mixer – See Audio/Video Mixer.

A:B:C Notation – The a:b:c notation for sampling ratios, as found in the ITU-R BT.601 specifications, has the following meaning: **a)** 4:2:2 means 2:1 horizontal downsampling, no vertical downsampling. Think 4 Y samples for every 2 Cb and 2 Cr samples in a scan line. **b)** 4:1:1 ought to mean 4:1 horizontal downsampling, no vertical. Think 4 Y samples for every 1 Cb and 1 Cr samples in a scan line. It is often misused to mean the same as 4:2:0. **c)** 4:2:0 means 2:1 horizontal and 2:1 vertical downsampling. Think 4 Y samples for every Cb and Cr samples in a scan line. Not only is this notation not internally consistent, but it is incapable of being extended to represent any unusual sampling ratios, that is different ratios for the Cb and Cr channels.

AAC (Advanced Audio Coding) – Part 7 of the MPEG-2 standard. It is a multichannel coding standard that defines the highest quality multichannel audio known today. It also has modes that perform extremely well for audio, speech and music at <16 kbps.

AAF (Advanced Authoring Format) – Used to describe the standardized metadata definitions that are used to exchange metadata between creative content workstations. This metadata format can contain much more information than the description implies. Nevertheless, this open standard "format" has been created primarily for post-production use. It is worth noting that the definition of AAF does provide for essence exchange as well as metadata exchange.

AAL (ATM Adaption or Adaptation Layer) – ATM protocols that map large data packets into ATM cells are defined by segmentation and reassembly protocols.

AAL5 (ATM Adaption or Adaptation Layer 5) – Connection-oriented, Unspecified Bit Rate (UBR). Least amount of error checking and retransmission.

AAU (Audio Access Unit) – See Access Unit.

A-B Rolls – Duplicate rolls of videotape information having identical time code; required to achieve effects of dissolves.

ABC – Television network financially supporting development of ACTV and pioneering the use of digital video transmission.

Aberration – A term from optics that refers to anything affecting the fidelity of the image in regards to the original scene.

ABKW – See Audio Breakaway.

Abort – Halts the program and returns control to the operator or operating system.

Absolute Time Code – Absolute time code (ATC) is generally recorded in the subcode or control track region of any digital tape. This is the code that digital tape machines use to locate specific points on a tape for autolocation or other functions. In some machines it is even used to synchronize the tape to other equipment. ATC is precisely accurate and usually conforms to the IEC standard which is easily converted to the more commercially used SMPTE time code. Unlike SMPTE, ATC always begins at zero at the beginning of a digital tape and increments one frame at a time until recording stops. Some DAT machines have the ability to function without ATC on a tape while others simply will not play a tape without it. These days almost all machines record it automatically so it will always be on every tape.

Absorption – In acoustics, the opposite of reflection. Sound waves are "absorbed" or soaked up by soft materials they encounter. Studio designers put this fact to work to control the problem of reflections coming back to the engineer's ear and interfering with the primary audio coming from the monitors. The absorptive capabilities of various materials are rated with an "Absorption Coefficient".

Absorption Coefficient – a) A measurement of the absorptive characteristics of a material in comparison to air. **b)** A measure of the relative amount of sound energy absorbed by the material when a sound strikes its surface.

ABU (Asia-Pacific Broadcasting Union) – The Asia-Pacific Broadcasting Union (ABU) is a professional association of television and radio broadcasters. It has over 100 members in 52 countries. The ABU was established in 1964 to promote the development of broadcasting in the Asia-Pacific region and to organize cooperative activities amongst its members.

AC Bias – The alternating current, usually of frequency several times higher than the highest signal frequency, that is fed to a record head in addition to the signal current. AC bias serves to linearize the recoding process and is universally used in analog recording. Generally, a large AC bias is necessary to achieve maximum long wavelength output and linearity, but a lower value of bias is required to obtain maximum short-wavelength output. The mechanism of AC bias can best be explained in terms of anhysteresis.

AC Coefficient – Any discrete cosine transform (DCT) coefficient for which the frequency in one or both dimensions is non-zero.

AC Coupled – a) AC coupling is a method of inputting a video signal to a circuit to remove any DC offset, or the overall voltage level that the video signal "rides" on. One way to find the signal is to remove the DC offset by AC coupling, and then do DC restoration to add a known DC offset (one that we selected). Another reason AC coupling is important is that it can remove harmful DC offsets. **b)** A connection that removes the constant voltage (DC component) on which the signal (AC component) is riding. Implemented by passing the signal through a capacitor.

AC Erasure – See Erasure.

AC'97, AC'98 – These are definitions by Intel for the audio I/O implementation for PCs. Two chips are defined: an analog audio I/O chip and a digital controller chip. The digital chip will eventually be replaced by a software solution. The goal is to increase the audio performance of PCs and lower cost.

AC-3 – Audio Coding algorithm number 3. An audio-coding technique used with ATSC. The audio compression scheme invented by Dolby Laboratories and specified for the ATSC Digital Television Standard. In the world of consumer equipment it is called Dolby Digital.

Academy – Pertaining to specifications that meet the Academy of Motion Picture Arts and Sciences standards, such as academy leader, academy format (for film stock), academy countdown, and so forth.

ACATS (Advisory Committee on Advanced Television Service) – A group comprised almost exclusively of presidents, chief executive officers, and chairs of the boards of major broadcasting, CATV, consumer electronics, and entertainment production companies. It is currently supported by a planning subcommittee (with two advisory groups and six working parties), a systems subcommittee (with four working parties), and an implementation subcommittee (with two working parties). ACATS is an entity under the FCC, and is the approving body of advanced TV in the USA. ACTS recommended the ATSC digital TV system to the FCC in November 1995.

ACC – See Automatic Color Correction.

Acceleration – Graphic accelerators function like application-specific microprocessors whose purpose is to work in conjunction with a PC's host microprocessor to display graphics. In general, graphic accelerators control frame memory, color processing, resolution, and display speed. with the advent of the high-speed local buses and higher clock rates, accelerators operate on 32-, 64-, and 128-bit pixel data.

Access Channels – Channels set aside by a cable operator for use by third parties, including the public, educational institutions, local governments, and commercial interests unaffiliated with the operator.

Access Time – a) The time required to receive valid data from a memory device following a read signal. **b)** This is the time it takes from when a disk command is sent, until the disk reaches the data sector requested. Access time is a combination of latency, seek time, and the time it takes for the command to be issued. Access time is important in data intensive situations like hard disk recording, multimedia playback, and digital video applications. Lower access times are better. Keeping your drives in good shape with periodic de-fragging, etc. will ensure that your drive is providing the fastest access times it can.

Access Unit (AU) – a) The coded data for a picture or block of sound and any stuffing (null values) that follows it. **b)** A coded representation of a presentation unit. In the case of audio, an access unit is the coded representation of an audio frame. In the case of video, an access unit includes all the coded data for a picture, and any stuffing that follows it, up to but not including the start of the next access unit. If a picture is not preceded by a group_start_code or a sequence_header_code, the access unit begins with a picture_start_code. If a picture is preceded by a group_start_code and/or a sequence_header_code, the access unit begins with the first byte of the first of these start codes. If it is the last picture preceding a sequence_end_code in the bit stream, all bytes between the last byte of the coded picture and the sequence_end_code (including the sequence_end_code) belong to the access unit.

Access Unit Header (AU Header) – Optional information preceding an Access Unit Payload. This information consists of decoding and/or presentation time stamps. This information may be defaulted, resulting in an empty AU header. The format of the AU header is determined in the ES header.

Access Unit Payload (AU Payload) – The data field of an access unit.

Account – See Login Account.

Accumulator – One or more registers associated with the Arithmetic and Logic Unit (ALU), which temporarily store sums and other arithmetical and logical results of the ALU.

Accuracy – The closeness of the indicated value to the true value.

ACD/ACD – Application Control Data/Application Communication Data

Acicular – Needle-shaped, used to describe the shape of oxide particles.

ACLE (Analog Component Link Equipment) – A form of MAC optimized for remote broadcasting links.

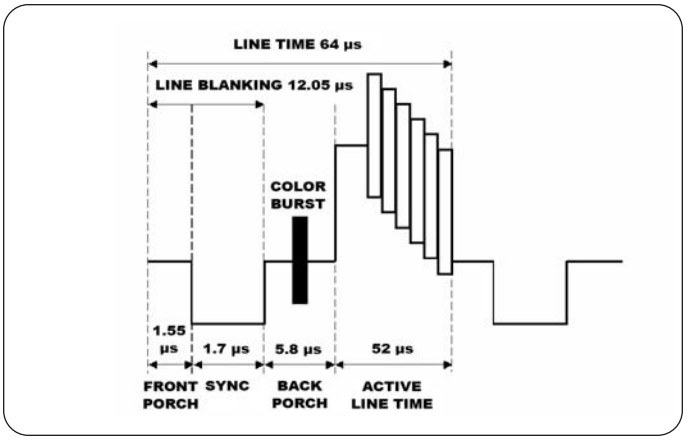
Acoustic Echo Canceller – Full-duplex audio technology; used for the elimination of acoustically-coupled return echoes within a teleconference room. Note that all microphones connected to an AEC are active at all times. Consequently, as more microphones are added, the total transmitted noise level (caused by picking up room ambient noise) increases. See also Tail Time, Echo Suppresser and Echo Return Loss Enhancement.

Acoustic Shadow – An area in which sound waves are attenuated due to the presence of an acoustic absorber or reflector in the path of the sound waves.

Acoustic Suspension – A type of speaker design using a sealed cabinet. Primarily used for low frequency enclosures, acoustic suspension designs use the air mass within the cabinet as a "spring" to help return the relatively massive speaker to the rest position. This allows heavier, longer throw drivers to be used, but results in a less efficient design requiring more amplifier power.

ACT (Anti-Comet-Tail) – This is a complex technique of preventing picture highlights from "comet-tailing" due to lack of beam current in the camera tube. (The usually colored trail behind a moving, very bright light/reflection in a picture is called a "comet-tail" since the effect looks similar to an astronomical comet.) The technique involves a special tube and circuitry to drive it. Basically, the charge due to a very bright object is never allowed to build up to an unmanageable level by discharging the target above a preset level during horizontal retrace time when the ACT action is turned on, with an increased beam current.

Active Line (PAL) – The part of the video waveform (usually 64 µs), which occupies the visible part of the signal (without sync, blanking or burst). The active line time is usually 52 µs. Also called Active Line Time or Active Video.



Active Line Time – The duration of a scanning line minus that period devoted to the horizontal blanking interval.

Active Lines – The total number of scanning lines minus those scanning lines devoted to the vertical blanking interval.

Active Picture – That portion of the ITU-R BT.601 digital picture signal between the SAV and EAV data words.

Active Picture Area – The part of a TV picture that contains actual picture as opposed to sync or other data. Vertically the active picture area is 487 lines for NTSC and 576 lines for PAL. The inactive area is called blanking.

Active Pixel Region – On a computer display, the area of the screen used for actual display of pixel information.

Active Video – The part of the video waveform that is not specified to be blanking, burst, or sync information. Most of the active video, if not all of it, is visible on the display screen.

Active Video Lines – All video lines that are not in the horizontal and vertical blanking intervals.

Active Window – On A PC, the only window that recognizes input (activity) from the keyboard and mouse; only one window is active at a time.

ActiveMovie – Microsoft's architecture for the control and processing of streams of multimedia data and software that uses this architecture to play digital video and sound. It is intended to supersede Video for Windows®.

Activity Detection – Refers to a method built into some multiplexers for detecting movement within the camera's field of view (connected to the multiplexer), which is then used to improve camera recording update rate.

ACTV (Advanced Compatible Television) – Techniques for ATV transmission developed by the DSRC, with support initially from NBC and RCA/GE Consumer Electronics (now Thomson Consumer Electronics) and with later support from such organizations as ABC and HBO. There are two ACTVs. **a)** ACTV I is a channel-compatible, receiver-compatible system utilizing many different techniques to add widescreen panels and increase horizontal and vertical resolution. Among the techniques are the filling of a Fukinuki hole, time compression, seam-elimination, spatio-temporal filtering, and quadrature modulation of the picture carrier. The last prevents direct compatibility with videotape recorders and with ordinary satellite transmission techniques. **b)** ACTV II is ACTV I plus an augmentation channel to improve resolution and sound.

Acuity – See Visual Acuity.

Adaptation – Visual process whereby approximate compensation is made for changes in the luminances and colors of stimuli, especially in the case of changes in illuminants.

Adaptation Field – Ancillary program data (especially PCR) which are uncoded and are transmitted at least every 100 ms after the TS header of a data stream (PID) belonging to a program.

Adaptation Layer Entity (AL Entity) – An instance of an MPEG-4 systems resource that processes AL PDUs associated to a single FlexMux channel.

Adaptation Layer Protocol Data Unit (AL PDU) – The smallest protocol unit exchanged between peer AL entities. It consists of AL PDU header and AL PDU payload. One or more AL PDUs with data from one or more elementary streams form the payload of a FlexMux PDU.

Adaptation Layer Protocol Data Unit Header (AL PDU Header) – Optional information preceding the AL PDU payload. It is mainly used for error detection and framing of the AL PDU payload. The format of the AL PDU header is determined when opening/configuring the associated FlexMux channel.

Adaptation Layer Protocol Data Unit Payload (AL PDU Payload) – The data field of an AL PDU.

Adaptation Layer Service Data Unit (AL-SDU) – An information unit whose integrity is preserved in transfer from one AL user to the peer AL user.

Adaptation Layer User (AL User) – A system entity that makes use of the services of the adaptation layer, typically an elementary stream entity.

Adapter – A device used to achieve compatibility between two items of audio/video equipment.

Adaptive – Changing according to conditions.

Adaptive Bit Allocation – The allocation of more bits to image areas of high activity which does not lend itself to all types of video compression techniques, especially when interframe sampling is used.

Adaptive Compression – Data compression software that continually analyzes and compensates its algorithm, depending on the type and content of the data and the storage medium.

Adaptive Differential Pulse Code Modulation – a) A compression technique that encodes the predictive residual instead of the original waveform signal so that the compression efficiency is improved by a predictive gain. Rather than transmitting PCM samples directly, the difference between the estimate of the next sample and the actual sample is transmitted. This difference is usually small and can thus be encoded in fewer bits than the sample itself. **b)** Differential pulse code modulation that also uses adaptive quantizing; an audio coding algorithm which provides a modest degree of compression together with good quality. **c)** A technique for compressing the transmission requirements of digital signals. ADPCM has been used by ABC between New York and Washington to allow NTSC transmission on a 45 Mbps (DS3) telephone company data transmission circuit. **d)** A pulse code modulation system typically operating at a high sampling rate whereby coding is based on a prior knowledge of the signal to be processed (i.e., greater than, equal to, or less than the previous sample). The system is adaptive in that digital bits of code signify different sizes of signal change depending on the magnitude of the signal.

Adaptive Emphasis – An ATV technique for improving detail of dark parts of the picture by increasing their level. If a complementary de-emphasis is performed at the receiver, noise can be reduced. Dolby B noise reduction (the form of Dolby noise reduction most common in consumer cassette recorders) is a classic example of complementary adaptive emphasis.

Adaptive Filter – A filter which changes its parameters on a continual basis to guarantee a constant or desired output value.

Adaptive Multichannel Prediction – Multichannel data reduction exploiting statistical inter-channel dependencies in audio.

Adaptive Noise Allocation – Variable assignment of coding noise in audio frequency bands based on a psychoacoustic model.

Adaptive Quantization – Varying quantization values are applied based on some model analysis of the data characteristics.

Adaptor – A device that allows an ordinary NTSC television to receive pictures from a non-receiver-compatible ATV system.

ADC – See A-to-D Converter.

Add Edit – An edit added between consecutive frames in a sequence segment with the timeline. An add edit separates segment sections so the user can modify or add effects to a subsection of the segment.

Added Calibrator – This is a feature of some waveform monitors which allows an internal 1 volt calibrator signal to be used as a reference for amplitude measurements.

Adder – Device that forms, as output, the sum of two or more numbers presented as inputs.

Additive – Any material in the coating of magnetic tape other than the oxide and the binder resins; for example, plasticizers (materials used to soften an otherwise hard or brittle binder), lubricants (materials used to lower the coefficient of friction of an otherwise high-friction binder), fungicides (materials used to prevent fungus growth), dispersants (to uniformly distribute the oxide particles) or dyes.

Additive Color – Color produced by "adding" colors, usually the combination of red, green and blue.

Additive Color System – Color specification system in which primary colors are added together to create a desired color. An example is the red/green/blue (RGB) system. Additive systems are generally associated with light emitting devices (CRTs).

Additive Mix – A mix wherein the instantaneous video output signal is equal to the weighted sum of the input video signals. Unless otherwise specified, "mix" is taken to mean "additive mix".

Address – Number that indicates the position of a word in the memory.

Address Bus – Set of wires (typically 32) used to transmit addresses, usually from the microprocessor to a memory or I/O device.

Address Decoding – Process of selecting a specific address or field of addresses to enable unique devices.

Address Dial – See SCSI Address Dial.

Addressable – Capable of being activated or accessed remotely by signals sent from a cable system's headend (usually refers to descramblers and other set-top boxes.)

Addressability – The capability to selectively and remotely activate, disconnect or descramble television signals in individual subscribers' homes. A functionality of pay-per-view systems.

Addressing Modes – Various methods of specifying an address as part of an instruction. See Direct Addressing, Indirect Addressing, Immediate Addressing and Indexed Addressing.

Adhesion – The degree to which the coating adheres to the base film. Anchorage may be checked by measuring the force required to separate the coating from the base film by means of a specially designed plow blade or, more simply, by determining whether the coating can be peeled from the base film by means of ordinary pressure-sensitive adhesive tape.

ADIF (Audio Data Interchange Format) – ADIF is just one header at the beginning of the AAC file. The rest of the data is just the same as a raw Advanced Audio Coding (AAC) file.

Adjacent Channel – A television transmission channel immediately adjacent to an existing channel. For example, channel 3 is adjacent to channels 2 and 4. There are three exceptions to what might otherwise be considered adjacent channels: there is a small gap between channels 4 and 5, there is a large gap between channels 6 and 7, and there is an enormous gap between channels 13 and 14. Adjacent channels figure into ATV in two ways. **a)** First, it is currently illegal to broadcast on adjacent channels in a single location. Some ATV proponents feel that augmentation channels might someday be allowed to be placed in adjacent channels. If half-size (3 MHz) or smaller augmentation channels are used, all current broadcasters could then be allowed an augmentation channel. Some proponents feel the use of a low power digital augmentation channel will allow adjacent channels to be used without interference. **b)** Second, some ATV proposals require that the augmentation channel be adjacent to the transmission channel or require a larger than normal transmission channel, thus occupying a channel and one of its adjacent channels.

Adjust input video timing to match a reference video input. Eliminates the need for manual timing adjustments.

Administrator – See System Administrator and Network Administrator.

ADO (Ampex Digital Optics) – Trade name for digital effects system manufactured and sold by Ampex.

ADPCM – See Adaptive Differential Pulse Code Modulation.

ADR (Automatic Display Replacement) – The process of looping playback of a selected region in a sequence and automatically recording multiple replacement takes.

ADSL – See Asymmetrical Digital Subscriber Line.

ADSR (Attack, Decay, Sustain and Release) – These are the four parameters found on a basic synthesizer envelope generator. An envelope generator is sometimes called a transient generator and is traditionally used to control the loudness envelope of sounds, through some modern designs allow for far greater flexibility. The Attack, Decay, and Release parameters are rate or time controls. Sustain is a level control. When a key is pressed, the envelope generator will begin to rise to its full level at the rate set by the attack parameter, upon reaching peak level it will begin to fall at the rate set by the decay parameters to the level set by the sustain control. The envelope will remain at the sustain level as long a the key is held down. Whenever a key is released, it will return to zero at the rate set by the release parameters.

ADTS (Audio Data Transport Stream) – ADTS headers are present before each Advanced Audio Coding (AAC) raw_data_block or block of 2 to 4 raw_data_blocks. Until the MPEG revision from December 2002 for MPEG-4 AAC ADTS headers, this was basically the same as a MP3 header, except that the emphasis field was not present for MPEG-2 AAC, only for MPEG-4 AAC.

ADTV (Advanced Definition Television) – A term sometimes used for both EDTV and HDTV.

Advance – The separation between a point on the sound track of a film and the corresponding picture image.

Advanced Coding Efficiency (ACE) – The ACE profile supports coding efficiency for both rectangular and arbitrary shaped objects. It is suitable for applications such as mobile broadcast reception, acquisition of image sequences, and other applications where high coding efficiency is requested and a small footprint isn't the prime concern.

Advanced Encoder – A device that changes RGB or DAV into NTSE utilizing some form or forms of pre-filtering to reduce or eliminate NTSC artifacts. Some advanced encoders also offer image enhancement, gamma correction, and the like.

Advanced Real-Time Simple (ARTS) – The ARTS profile provides advanced error resilient coding techniques of rectangular video objects using a back channel and improved temporal resolution stability with the low buffering delay. Use it for real-time coding applications, such as the videophone, teleconferencing and remote observation.

Advanced Television Systems Committee (ATSC) – The US-based organization that is defining the high definition television standard for the U.S.. A sort of NTSE for ATV. It is comprised of three technology groups and a number of smaller committees. **T1 Group** is studying receiver-compatible improved NTSC. **T2 Group** is studying non-receiver-compatible 525 scanning line production, distribution, and display systems. **T3 Group** is studying HDTV.

Advanced TV – Although sometimes used interchangeably, advanced and high-definition television (HDTV) are not one and the same. Advanced television (ATV) would distribute wide-screen television signals with resolution substantially better than current systems. It requires changes to current emission regulations, including transmission standards. In addition, ATV would offer at least two-channel, CD-quality audio.

AEA (American Electronics Association) – An organization of manufacturers more associated with computers and communications than is the EIA. The AEA has established an ATV Task Force, the members of which include: AT&T, Apple Computer, Hewlett-Packard, IBM and Motorola.

AEC – See Acoustic Echo Canceller.

AES (Audio Engineering Society) – The official association of technical personnel, scientists, engineers and executives in the audio field. Of potential interest in electronic production are the following: SC-2, Subcommittee on Digital Audio; SC-3, Subcommittee on the Preservation and Restoration of Audio Recording; and SC4, Subcommittee on Acoustics.

AES/EBU – a) Informal name for a digital audio standard established jointly by the Audio Engineering Society and European Broadcasting Union organizations. **b)** The serial transmission format standardized for professional digital audio signals (AES3-1992 AES Recommended Practice for Digital Audio Engineering – Serial Transmission Format for Two-Channel Linearly Represented Digital Audio Data). **c)** A specification using time division multiplex for data, and balanced line drivers to transmit two channels of digital audio data on a single twisted-pair cable using 3-pin (XLR) connectors. Peak-to-peak values are between 3 and 1-V with driver and cable impedance specified as 110 ohms.

AES/EBU Digital Audio – Specification titled "AES recommended practice for digital audio engineering – Serial transmission format for two channel linearity represented digital audio data". AES/EBU digital audio standard that is the result of cooperation between the US based AES and the European based EBU.

AES3 – See AES/EBU Digital Audio.

AF – See Adaptation Field.

AFC – See Automatic Frequency Control.

AFC/Direct – See Waveform Monitors.

AFI (Authority and Format Identifier) – Part of network level address header.

AFL (After Fade Listen) – Used in mixing boards to override the normal monitoring path in order to monitor a specific signal at a predefined point in the mixer. Unlike PFL, the AFL signal definition is taken after the fader of a channel or group buss such that the level of the fader will affect the level heard in the AFL monitor circuit. AFL is sometimes also taken after the pan pot which also allows the engineer to monitor the signal with the pan position as it is in the mix. AFL is a handy way to monitor a small group of related instruments by themselves with all of their eq, level, and pan information reproduced as it is in the overall mix. An AFL circuit that includes pan information is often called "solo" or "solo in place" depending upon who builds the mixer.

AFM (Audio Frequency Modulation) – The most common form of audio recording found in most consumer and professional video recording decks, especially in VHS and 8 mm recorders. AFM audio is limited to dynamic range and frequency response, and can include stereo and multitrack audio.

AFNOR (Association Francaise de Normalisation) – French standards body.

A-Frame Edit – A video edit which starts on the first frame of the 5 video frame (4 film frame) sequence created when 24 frame film is transferred to 30 frame. The A-frame is the only frame in the sequence where a film frame is completely reproduced on one complete video frame. Here is the full sequence. (The letters correspond to the film frames.) A-frame = video fields 1&2, B-frame = video fields 1&2&1, C-frame = video fields 2&1, D-frame = video fields 2&1&2.

Aftertouch – MIDI data sent when pressure is applied to a keyboard after the key has been struck, and while it is being held down or sustained. Aftertouch is often routed to control vibrato, volume, and other parameters. There are two types: the most common is Channel Aftertouch which looks at the keys being held, and transmits only the highest aftertouch value among them. Less common is Polyphonic Aftertouch, which allows each key being held to transmit a separate, independent aftertouch value. While polyphonic aftertouch can be extremely expressive, it can also be difficult for the unskilled to control, and can result in the transmission a great deal of unnecessary MIDI data, eating bandwidth and slowing MIDI response time.

AFV – See Audio Follow Video.

AFX (Animation Framework Extension) – AFX is an integrated toolbox that uses existing MPEG-4 tools to create powerful synthetic MPEG-4 environments. This collection of interoperable tool categories (with each tool providing a functionality, such as an audiovisual stream) works together to produce a reusable architecture for interactive animated content.

AGC – See Automatic Gain Control.

AI (Amplitude Imbalance) – The purpose of the AI measurement is to assess the QAM distortions resulting from amplitude imbalance of I and Q signals.

AIFF (Audio Interchange File Format) – This is the format for both compressed and uncompressed audio data.

AIFF-C (Audio Interchange File Format-Condensed) – A sampled-sound file format that allows for the storage of audio data. This format is primarily used as data interchange format but can be used as a storage format as well. OMF Interchange includes AIFF-C as a common interchange format for non-compressed audio data.

Air Tally – The ability of a switcher console to indicate to an operator which video sources and keys are on air at any given time. Ampex switchers have "true" air tally in that they sense actual presence of sources.

AIT (Application Information Table) – Provides information about the activation state of service bound applications.

A-Law – A pulse code modulation (PCM) coding and companding standard that is used in Europe for digital voice communications.

ALC – See Automatic Level Control.

ALC (Automatic Light Control) – A part of the electronics of an automatic iris lens that has a function similar to backlight compensation in photography.

Algorithm – a) A set of rules or processes for solving a problem in a finite number of steps. In audio, video and data coding, the step-by-step procedure (often including repetition) which provides suitable compression and/or encryption for the specific application. When used for compression, this mathematical process results in a significant reduction in the number of bits required for transmission and may be either lossless or lossy.
b) Step-by-step procedure for the solution to a problem. First the problem is stated and then an algorithm is devised for its solution.

Alias, Aliasing – Something other that what it appears to be. Stairsteps on what should be a smooth diagonal line are an example of spatial alias. Wagon wheels appearing to move backwards are an example of temporal alias. Aliases are cause by sampling and can be reduced or eliminated by pre-filtering, which can appear to be a blurring effect. Defects in the picture typi-cally caused by insufficient sampling (violation of the Nyquist sampling rate) in the analog to digital conversion process or poor filtering of digital video. De-fects are typically seen as jaggies on diagonal lines and twinkling or brightening in picture detail. Examples are: Temporal Aliasing – such as rotating wagon wheel spokes appearing to rotate in the reverse direction. Raster Scan Aliasing – such as sparkling or pulsing effects in sharp horizontal lines. Stair-Stepping – stepped or jagged edges in diagonal lines or the diagonal parts of a letter.

Alignment – Most commonly, Head Alignment, but also used to describe the process of adjusting a recorder's Bias and Equalization for optimum results from a specific tape.

Alignment Jitter – The variation in time of the significant instants (such as zero crossings) of a digital signal relative to a hypothetical clock recovered from the signal itself. This recovered clock will track in the signal up to its upper clock recovery bandwidth, typically 1 kHz to 100 kHz. Measured alignment jitter includes those terms above this frequency. Alignment jitter shows signal-to-latch clock timing margin degradation. The allowed specification for SMPTE 292 is 0.2 unit intervals.

Alpha – See Alpha Channel and Alpha Mix.

Alpha Channel – The alpha channel is used to specify an alpha value for each color pixel. The alpha value is used to control the blending, on a pixel-by-pixel basis, of two images:

new pixel = (alpha)(pixel A color) + 1 – (alpha)(pixel B color)

Alpha typically has a normalized value of 0 to 1. In a computer environment, the alpha values can be stored in additional bit planes of frame-buffer memory. When you hear about 32-bit frame buffers, what this really means is that there are 24 bits of color, 8 each for red, green, and blue, along with an 8-bit alpha channel. Also see Alpha Mix.

Alpha Map – The representation of the transparency parameters associated to a texture map.

Alpha Mix – This is a way of combining two images. How the mixing is performed is provided by the alpha channel. The little box that appears over the left-hand shoulder of a news anchor is put there by an alpha mixer. Wherever the pixels of the little box appear in the frame buffer, an alpha number of "1" is put in the alpha channel. Wherever they don't appear, an alpha number of "0" is placed. When the alpha mixer sees a "1" coming from the alpha channel, it displays the little box. Whenever it sees a "0", it displays the news anchor. Of course, it doesn't matter if a "1" or a "0" is used, but you get the point.

Alpha Plane – Image component providing transparency information.

Alphanumeric – Set of all alphabetic and numeric characters.

ALU – See Arithmetic and Logic Unit.

AM – A form of modulation where the level of the baseband information affects the level of the carrier. See Amplitude Modulation.

A-MAC – A MAC (Multiplexed Analog Component) with audio and data frequency multiplexed before modulation. See also MAC.

Ambient – Natural, or surrounding light in a clip.

Ambient Lighting – Light that emanates from no particular source, coming from all directions with equal intensity.

Ambient Sound – A representative sample of background audio (such as a refrigerator hum or crowd murmur) particular to a shooting location. Ambient sound is gathered in the course of a production to aid the sound editor in making cuts or filling in spaces between dialog. Also called Room Tone.

American Television and Communications – See ATC.

A-Mode – A linear method of assembling edited footage. In A-mode, the editing system performs edits in the order in which they will appear on the master, stopping whenever the edit decision list (EDL) calls for a tape that is not presently in the deck. See also B-Mode, C-Mode, D-Mode, E-Mode, Source Mode.

A-Mode Edit – An editing method where the footage is assembled in the final scene order. Scene 1, scene 2, etc.

Amplitude – a) The height of a waveform above or below the zero line. The maximum value of a varying waveform. **b)** The maximum distance an oscillating body (e.g., a pendulum) or wave travels from a mean point.

Amplitude Modulation (AM) – a) The process used for some radio (AM broadcast, in North American audio service broadcast over 535 kHz-1705 kHz) and television video transmission. A low frequency (program) signal modulates (changes) the amplitude of a high frequency RF carrier signal (causing it to deviate from its nominal base amplitude). The original program signal is recovered (demodulated) at the receiver. This system is extensively used in broadcast radio transmission because it is less prone to signal interference and retains most of the original signal quality. In video, FM is used in order to record high quality signals on videotape. **b)** The process by which the amplitude of a high-frequency carrier is varied in proportion to the signal of interest. In the PAL television system, AM is used to encode the color information and to transmit the picture. Several different forms of AM are differentiated by various methods of sideband filtering and carrier suppression. Double sideband suppressed carrier is used to encode the PAL color information, while the signal is transmitted with a large-carrier vestigial sideband scheme.

Amplitude Non-Uniformity – A term used in connection with magnetic tape testing and refers to the reproduced peak-to-peak voltage and its variation from what was recorded.

Amplitude Versus Frequency Response – Refer to the Frequency Response discussion.

AM-VSB (Amplitude Modulation with Vestigial Sideband) – The form of modulation used in broadcast and cable television transmission. It is more efficient than dual-sideband amplitude modulation and is easier to implement than single-sideband amplitude modulation.

Analog – a) A continuous electrical signal that carries information in the form of variable physical values, such as amplitude or frequency modulation. **b)** A signal which moves through a continuous range of settings or levels. **c)** An adjective describing any signal that varies continuously as opposed to a digital signal that contains discrete levels representing the binary digits 0 and 1. **d)** A signal that is an analogy of a physical process and is continuously variable, rather than discrete. See also Digitization.

Analog Components – Video signals in which a continuously variable voltage or current (rather than a set of digital numbers) represents a pixel.

Analog Interface – An interface between a display controller and a display in which pixel colors are determined by the voltage levels on three output lines (RGB). Theoretically, an unlimited number of colors can be supported by this method (24 bits per pixel allows 16,777,216 colors). The voltage level on any line varies between zero volts (for black) to about 700 millivolts (for maximum brightness).

Analog Monitor – A video monitor which accepts analog signals. Several types of inputs are accepted by analog monitors: composite video, RGB & sync, Y/C, YUV and any combination of these formats. The signals transmitted to an analog monitor are usually between 0 and 1 V and use 75 ohm coaxial cables.

Analog Recording – The common form of magnetic recording where the recorded waveform signal maintains the shape of the original waveform signal.

Analog Signal – Representation of data by continuously varying quantities. An analog electrical signal has a different value of volts or amperes for electrical representation of the original excitement (sound, light) within the dynamic range of the system.

Analog Video – a) A video signal represented by a smooth and infinite number of video levels. **b)** A video signal made of a continuous electrical signal. A television and VCR can be analog video devices. To be stored and manipulated on a computer, analog video must be converted to digital video.

Analysis Filterbank – Filterbank that transforms a broadband signal into a set of subsampled sub-band samples. An audio encoder function.

Analysis-By-Synthesis Coding – A method of coding in which the analysis procedure (encoder) has embedded in it the synthesis procedure (decoder). The reconstructed and original signals are compared and the difference is minimized. Used in many recent speech coding standards.

Anamorphic – a) Unequally scaled in vertical and horizontal dimensions. Applies to lenses used for widescreen movies. **b)** Distortion in viewing of images or geometry related to the difference between computer monitor screen aspect ratio (in which pixels are square) and broadcast, projected or frame aspect ratio (in which image pixels are wider than they are high).

Anamorphic Squeeze – A change in picture geometry to compress one direction (usually horizontal) more than the other. Anamorphic squeeze lenses made CinemaScope possible. Occasionally, when widescreen movies are transferred to video, an anamorphic squeeze will be used (usually only in credits) to allow the smaller aspect ratio of television to accommodate the larger movie aspect ratio. Some ATV proponents have suggested a gentle anamorphic squeeze as a technique to assist in aspect ratio accommodation.

Anamorphic Video – Found on a large number of DVDs, anamorphic video squeezes a 1.78:1 picture shape into a 1.33:1 image area. If you view an anamorphic video image on a 1.33 set, the characters will look tall and thin. This format is designed for the 1.78 aspect ratio TV sets where the horizontal is stretched back out to the full width of the set. Unsqueezing an anamorphic image on a 1.33 set is accomplished by squeezing the vertical size. The advantage of the anamorphic video system is 33% more vertical information in a widescreen picture.

Anchor Frame – A video frame that is used for prediction. I-frames and P-frames are generally used as anchor frames, but B-frames are never anchor frames.

Anchor Point – A bit stream location that serves as a random access point. MPEG I-frames are the most common anchor points.

Anchorage – For recording tape, the degree to which the magnetic tape oxide coating adheres to the base film.

Ancillary Timecode (ATC) – BT.1366 defines how to transfer VITC and LTC as ancillary data in digital component interfaces.

Anechoic – Literally, without echoes. Anechoic refers to the absence of audio reflections. The closest thing to this situation in nature is the great outdoors, but even here there are reflections from the ground, various objects, etc. It is almost impossible to create a truly anechoic environment, as there is no such thing as a perfect sound absorber. At high frequencies, it is possible to create near-anechoic conditions, but the lower the frequency, the harder that is.

Anechoic Chamber – A room which has totally sound absorbent walls, so that no reflected waves can exist and only the direct waves are heard.

Angle – An angle is a scene recorded from different viewpoints. Each angle is equal in time length and an Angle Block may contain up to nine angles.

Angle Menu – Menu used to select the Angle number.

Anhysteresis – The process whereby a material is magnetized by applying a unidirectional field upon which is superimposed an alternating field of gradually decreasing amplitude. One form of this process is analogous to the recoding process using AC Bias.

Animatic – Limited animation consisting of art work shot and edited to serve as a videotape storyboard. Commonly used for test commercials.

Animation – a) Animation is the process of fooling the human eye into perceiving a moving object by presenting the eye with a rapid succession of still pictures. Each still is called a frame. On the Cubicomp, animation consists of moving objects which, in themselves stay unchanged. **b)** The recording of a sequence of still artwork or objects in a way that makes them appear to move on film or video. 24 fps is considered the appropriate speed for animation.

Animation Curve – A curve depicting the interpolation between the various keyframes.

Animation Path – The motion of an object as it flies through space is called its animation or motion path.

Anisotropy – Directional dependence of magnetic properties, leading to the existence of easy or preferred directions of magnetization. Anisotropy of a particle may be related to its shape, to its crystalline structure or to the existence of strains within it. Shape anisotropy is the dominant form in acicular particles.

ANRS, Super ANRS – A noise reduction system used to JVC. ANRS operates on principles similar to those used by the Dolby system. Therefore, there is a degree of compatibility between recordings made with either system.

ANSI (American National Standards Institute) – ANSI is a voluntary and privately funded business standards group in the USA. ANSI seeks to promote and to facilitate consensus standards nationally, and is internationally engaged as the sole US member of the ISO. The members of ANSI consist of about 1,300 American and international companies, 30 government agencies and some 250 organizations of trade, labor, professionals, consumers, etc.

ANSI 4.40 – See AES/EBU Digital Audio.

Answer – Smoothing, removing, or reducing jagged edges along the lines and curves in test, images, or geometry.

Answer Print – The first print combining picture and sound submitted by the laboratory for the customers' approval.

Anti-Alias Filter – A filter (typically a lowpass filter) used to bandwidth-limit the signal to less than half the sampling rate before sampling.

Anti-Aliased Fonts – Computer generated fonts that have been digitally rounded for smooth edges.

Anti-Aliasing – The process of reducing aliasing effects. Aliasing occurs because a raster system is "discrete", i.e., made up of pixels that have finite size. Representing a line with black and white pixels results in "jaggies", or "aliases". These are particularly disturbing during animation. To correct them, "anti-aliasing" techniques are used. These techniques compute the proportion of a pixel to be a blend of the pixel's existing color (background) and the edge's value. This isn't possible in color mapped mode because each color map location is already allocated; there aren't enough map locations.

AOE (Applications and Operational Environments)

A-Only Edit (Audio-Only Edit)

AP – See Active Picture.

Aperture – a) An adjustable opening in a lens which, like the iris in the human eye, controls the amount of light entering a camera. The size of the aperture is controlled by the iris adjustment and is measured in F-stops. A smaller F-stop number corresponds to a larger opening that passes more light. **b)** As applied to ATV, the finite size and shape of the point of the electron beam in a camera or picture tube. As the beam does not come to an infinitesimal point, it affects the area around it, reducing resolution. **c)** The opening of a lens that controls the amount of light reaching the surface of the pickup device. The size of the aperture is controlled by the iris adjustment. By increasing the F-stop number (F/1.4, F/1.8, F/2.8, etc.) less light is permitted to pass to the pickup device.

Aperture Correction – a) Signal processing that compensates for a loss of detail caused by the aperture. It is a form of image enhancement adding artificial sharpness and has been used for many years. **b)** Electrical compensation for the distortion introduced by the (limiting) size of a scanning aperture. **c)** The properties of the camera lens, optical beam-splitting installation, and camera tube all contribute to a reduced signal at higher spatial frequencies generally falling off as an approximate sin (x)/x function. Additionally, it is obvious in a scanning system that the frequency response falls off as the effective wavelength of the detail to be resolved in the image approaches the dimension of the scanning aperture and becomes zero when the effective wavelength equals the dimension of the scanning aperture. Aperture correction normally introduced in all video cameras restores the depth of modulation to the waveform at higher frequencies with the objective of flat response to 400 TV lines (in NTSC) for a subjective improvement in image quality.

Aperture Delay – In ADCs, aperture delay is the time from an edge of the input clock of the ADC until the time the part actually takes the sample. The smaller this number, the better.

Aperture Jitter – The uncertainty in the aperture delay. This means the aperture delay time changes a little bit over time, and that little bit of change is the aperture jitter.

Aperture, Camera – The available maximum dimensions of the optical image on the active surface of the photo-sensor, within which good quality image information is being recorded. The camera aperture determines the maximum usable scene information captured and introduced into the system, and available for subsequent processing and display. These dimensions are usually defined by standards. (Note: Not to be confused with lens aperture, which defines the luminous flux transmission of the optical path.

Aperture, Clean – The concept of a clean aperture in a digital system defines an inner picture area (within the production aperture) within which the picture information is subjectively uncontaminated by all edge transient distortions (SMPTE 260M). Filtrations for bandwidth limitation, multiple digital blanking, cascaded spatial filtering, etc., introduce transient disturbances at the picture boundaries, both horizontally and vertically. It is not possible to impose any bounds on the number of cascaded digital processes that might be encountered in the practical post-production system. Hence, the clean aperture is defined to represent an acceptable (and practical) worst-case level of production.

Aperture, Display – The available maximum dimensions (mapped back into the camera aperture) for the system's ability to display good quality image information. The information available for display is usually cropped from the total captured by the cascade of tolerances that may be incorporated in the system, and also by intentional design features that may be introduced in the display.

Aperture, Production – A production aperture for a studio digital device defines an active picture area produced by signal sources such as cameras, telecines, digital video tape recorders, and computer-generated pictures. It is recommended that all of this video information be carefully produced, stored, and properly processed by subsequent digital equipment. In particular, digital blanking in all studio equipment should rigorously conform to this specified production aperture (SMPTE 260M). The width of the analog active horizontal line is measured at the 50% points of the analog video signal. However, the analog blanking may differ from equipment to equipment, and the digital blanking may not always coincide with the analog blanking.

Aperture, Safe Action – As defined by a test pattern, a safe action aperture indicates the safe action image area within which all significant action must take place, and the safe title image area, within which the most important information must be confined, to ensure visibility of the information on the majority of home television receivers. SMPTE RP 27.3 defines these areas for 35 mm and 16 mm film and for 2 x 2-inch slides.

API (Application Program Interface) – a) The software used within an application program to activate various functions and services performed by the operating system. **b)** The Windows operating system refers to API functions as those which open and close windows, interpret mouse movement, read the keyboard, etc. These control-type functions are called "hooks" to the operating system. **c)** APIs define the interfaces to the library of tools that are made available by the MPEG-4 systems, and the interfaces of the pieces of code that can be downloaded to the MPEG-4 systems.

APL (Average Picture Level) – The average signal level (with respect to blanking) during active picture time, expressed as a percentage of the difference between the blanking and reference white levels.

Apostilb – A photometric unit for measuring luminance where, instead of candelas, lumens are used to measure the luminous flux of a source.

Application – An application runs in a module, communicating with the host, and provides facilities to the user over and above those provided directly by the host. An application may process the transport stream.

Application Format – A specification for storing information in a particular way to enable a particular use.

Application Window – The workspace (window) available to an application. The size can be adjusted by the user and limited only by the size of the monitor's display.

APS (Advanced Photo System) – A new photographic system conceived by Kodak and developed jointly with Canon, Fuji, Minolta, and Nikon. The APS was launched in April 1996. APS also represents the file format used to store data on the new film's magnetic coating.

Apt-X100 – The apt-X100 is a proprietary audio compression algorithm from APT, Ltd., which features an adaptive differential PCM (ADPCM) algorithm in four sub-bands. The algorithm provides a fixed 4:1 compression with low delay and bandwidths ranging from 7.5 kHz to 22.5 kHz and output bit rates from 64 to 384 kbit/s, depending on the sampling rate.

APU (Audio Presentation Unit 13818-1) – A 13818-1 audio frame.

Architecture – a) Logical structure of a computer system. **b)** In digital video, architecture (also known as format) refers to the structure of the software responsible for creating, storing and displaying video content. An architecture may include such things as compression support, system extensions and browser plug-ins. Different multimedia architectures offer different features and compression options and store video data in different file formats. QuickTime, RealVideo and MPEG are examples of video architectures (though MPEG is also a type of compression).

Archive – a) Off-line storage of video/audio onto backup tapes, floppy disks, optical disks, etc. **b)** A collection of several files bundled into one file by a program (such as ar, tar, bar, or cpio) for shipment or archiving. This method is very reliable and can contain large amounts of data. **c)** Long-term off-line storage. In digital systems, pictures are generally archived onto some form of hard disk, magnetic tape, floppy disk or DAT cartridge.

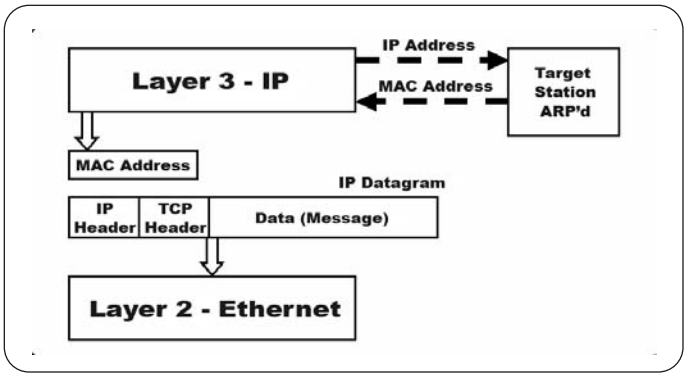
ARIB (Association of Radio Industries and Businesses) – ARIB conducts studies and R&D, provides consultation services for radio spectrum coordination, cooperates with other organizations around the world and provides frequency change support services for the smooth introduction of digital terrestrial television broadcasting.

Arithmetic and Logic Unit (ALU) – One of three essential components of a microprocessor. The other two are the registers and the control block. The ALU performs various forms of addition, subtraction, and logic operations, such as ANDing the contents of two registers or masking the contents of a register.

Arithmetic Coding – Perhaps the major drawback to each of the Huffman encoding techniques is their poor performance when processing texts where one symbol has a probability of occurrence approaching unity. Although the entropy associated with such symbols is extremely low, each symbol must still be encoded as a discrete value. Arithmetic coding removes this restriction by representing messages as intervals of the real numbers between 0 and 1. Initially, the range of values for coding a text is the entire interval (0, 1). As encoding proceeds, this range narrows while the number of bits required to represent it expands. Frequently occurring characters reduce the range less than characters occurring infrequently, and thus add fewer bits to the length of an encoded message.

A-Roll – A method of conforming that requires the compositing of all multilayer effects into a single layer (including laboratory-standard dissolves and fades) before assembly. Also called Single-Strand Editing.

ARP (Address Resolution Protocol) – A TCP/IP protocol used to obtain a node's physical address. A client station broadcasts an ARP request onto the network with the IP address of the target node it wishes to communicate with, and the node with that address responds by sending back its physical address so that packets can be transmitted. ARP returns the layer 2 address for a layer 3 address. Since an ARP gets the message to the target machine, one might wonder why bother with IP addresses in the first place. The reason is that ARP requests are broadcast onto the network, requiring every station in the subnet to process the request.



ARQ – See Application Programming Interface.

Array Processor – A compute engine that efficiently performs operations on large amounts of data with a regular structure (array).

ARS – See Automatic Route Selection.

Artifacts – a) Artifacts can range from noise and snow, to spots. Anything that is visually wrong with the picture is an artifact. Artifacts however do not include picture errors caused by improperly adjusted displays. Artifacts are visual errors caused by the signal being sent to the display. **b)** A defect or distortion of the image, introduced along the sequence from origination and image capture to final display. Artifacts may arise from the overload of channel capacity by excess signal bandwidth. Artifacts may also result from: sampling effects in temporal, spatial, or frequency domains; processing by the transfer functions; compromises and inadequacies in the system employed; cascading of minor defects; basically any other departure of the total system from "complete transparency". **c)** Visible (or audible) consequences of various television processes. Artifacts are usually referred to only when they are considered defects. Artifact elimination is often more apparent than quality increases such as resolution enhancement. **d)** Interference or other unwanted "noise" in video such as flickering, changes in color and macroblocking. Some artifacts, such as macroblocking, can be remedied in video compression and some cannot. The quality of the finished product is, in large part, no better than the source material. See also Filter Artifacts, Impairments, and NTSC Artifacts.

ASA – Exposure index or speed rating that denotes the film sensitivity, defined by the American National Standards Institution. Actually defined only for black-and-white films, but also used in the trade for color films.

ASCII (American Standard Code for Information Interchange) – a) Character code used for representing information as binary data in most computer systems. b) A standard code for transmitting data, consisting of 128 letters, numerals, symbols and special codes each of which is represented by a unique binary number.

ASF (Active Streaming Format) – a) A Microsoft file format for digital video playback over the Internet, or on a standalone computer. Kind of a wrapper around any of a number of compression types, including MPEG. **b)** Part of a NetShow, a proprietary streaming media solution from Microsoft. Biggest competitor is Real Networks. While this 'wrapper' supports many standard formats, ASF files are themselves proprietary.

ASI (Asynchronous Serial Interface) – Transmission standard defined by the digital video broadcast (DVB) used to connect video delivery equipment within a cable, satellite or terrestrial plant.

ASIC (Application Specific Integrated Circuit) – An integrated circuit designed for special rather than general applications.

ASN.1 (Abstract Syntax Notation 1) – OSI language for describing data types independent of particular computer structures and representation techniques. Described by ISO International Standard 8824.

ASPEC (Adaptive Spectral Perceptual Entrophy Coding) – An algorithm developed by Fraunhofer Institut, AT&T, Thomas Brandt, and the CNET. The ASPEC algorithm was later used for developing the MPEG audio Layer 3 specification.

Aspect Ratio – The ratio of the width of the picture to the height. For most current TVs, this ratio is 4:3. For HDTV, the ratio will be 16:9. The aspect ratio, along with the number of vertical scan lines that make up the image, determines what sample rate should be used to digitize the video signal.

:1	:9	Description
1.0	9	Square photographic formats, including Instamatic 126
1.33	12	Existing television, old movies, Pocket Instamatic 110
1.44	13	IMAX film
1.5	13.5	35mm still photographs, proposed for theatrical release
1.61	14.5	Faroudja HDTV proposal
1.67	15	Original NHK proposal, theatrical projection outside the U.S.
1.78	16	ATSC/SMPTE HDEP standard, optimized for shoot and protect
1.85	17	Theatrical projection in the U.S.
2.0	18	Most forms of VistaVision
2.2	20	Some widescreen movie formats
2.35	21	CinemaScope and similar movie formats
2.6	23	Cinerama
2.7	24	Dimension-150, Ultra-Panavision
2.77	25	Dynavision widescreen 3D film format
4.0	36	Polyvision

Aspect Ratio Accommodation – Techniques by means of which something shot in one aspect ratio can be presented in another. The five currently used or proposed techniques are compared in the following table. It is also possible to combine techniques. Current ATV aspect ratio debates concentrate on the problems of presenting widescreen images to existing TV sets; the same problems (in an opposite direction) will occur when current aspect ratio images are presented on widescreen TV sets. In movie theaters these problems are usually solved with movable drapes.

	Blanking Adjust	Truncation	Pan and Scan	Anamorphic Squeeze	Shoot and Protect
Maintain Director's Intent	Y	N	N	N	Y
Uses Full Screen (No Burn)	N	Y	Y	Y	Y
Displays All Action	Y	N	N	Y	Y
Maintains Picture Geometry	Y	Y	Y	N	Y
Automatic Conversion Possible	Y	Y	N	Y	Y
Full Production Freedom	Y	Y	Y	Y	N

Asperities – Small projecting imperfections on the surface of the tape costing that limit and cause variations in head-to-tape contact.

Aspherical Lens – A lens that has an aspherical surface. It is harder and more expensive to manufacture, but it offers certain advantages over a normal spherical lens.

Assemble – One of the two editing modes that are possible with video tapes. All tracks on the tape are added free of disturbances at the cutting point, but all tracks are newly written. The other editing method is known as Insert Edit.

Assembled Edit – a) Electronic edit that replaces all previously recorded material with new audio and video and a new control track, starting at the edit point. Inserting a new control track allows for a constant speed reference throughout the entire tape. **b)** Adding material that has a different signal to the end of a pre-recorded section of a videotape. Adding an assemble edit to the middle of an existing segment causes an abrupt and undesirable change in the sync of the video signal. Contrast with Insert Edit.

Assembler Program – Translates assembly language statements (mnemonics) into machine language.

Assembly Language – Machine-oriented language. A program is normally written as a series of statements using mnemonic symbols that suggest the definition of the instruction. It is then translated into machine language by an assembler program.

Astigmatism – The uneven foreground and background blur that is in an image.

ASV (Audio Still Video) – A still picture on a DVD-Audio disc.

ASVP (Application-Specific Virtual Prototype)

Asymmetric Compression – Compression in which the encoding and decoding require different processing power (the encoding is normally more demanding).

Asymmetrical Digital Subscriber Line – Bellcore's term for one-way T-1 to the home over the plain old, single twisted pair wiring already going to homes. ADSL is designed to carry video to the home. ADSL, like ISDN, uses adaptive digital filtering, which is a way of adjusting itself to overcome noise and other problems on the line. According to Northern Telecom, initial ADSL field trails and business cases have focused on ADSL's potential for video on Demand service, in competition with cable pay-per-view and neighborhood video rental stores. But ADSL offers a wide range of other applications, including education and health care. Once telephone companies are able to deliver megabits to the home, Northern Telecom expects an explosion in potential applications including work-at-home access to corporate LANs, interactive services such as home shopping and home banking and even multi-party video gaming, interactive travelogues, and remote medical diagnosis. Multimedia retrieval will also become possible, enabling the home user to browse through libraries of text, audio, and image data – or simply subscribe to CD-quality music services. In the field of education, ADSL could make it possible to provide a low-cost "scholar's workstation" – little more than a keyboard, mouse and screen – to every student, providing access to unlimited computer processing resources from their home. For a more modern version of ADSL, see DMT, which stands for Discrete Multi-Tone.

Asynchronous – a) A transmission procedure that is not synchronized by a clock. b) Any circuit or system that is not synchronized by a common clock signal. c) Lacking synchronization. In video, a signal is asynchronous when its timing differs from that of the system reference signal. A foreign video signal is asynchronous before a local frame synchronizer treats it.

Asynchronous Data Streaming – Streaming of only data without any timing requirements. See Asynchronous Data Streaming, Synchronous Data Streaming.

Asynchronous Signals – Data communication transmission of signals with no timing relationship between the signals. Stop and start bits may be used to avoid the need for timing clocks.

Asynchronous Transfer Mode (ATM) – a) A digital transmission system using packets of 53 bytes for transmission. ATM may be used for LANs and WANs. ATM is a switching/ transmission technique where data is transmitted in small, 53 byte fixed sized cells (5 byte header, 48 byte payload). The cells lend themselves both to the time-division-multiplexing characteristics of the transmission media, and the packet switching characteristics desired of data networks. At each switching node, the ATM header identifies a virtual path or virtual circuit that the cell contains data for, enabling the switch to forward the cell to the correct next-hop trunk. The virtual path is set up through the involved switches when two endpoints wish to communicate. This type of switching can be implemented in hardware, almost essential when trunk speed range from 45 Mbps to 1 Gbps. The ATM Forum, a worldwide organization, aimed at promoting ATM within the industry and the end user community was formed in October 1991 and currently includes more than 500 companies representing all sectors of the communications and computer industries, as well as a number of government agencies, research organizations and users. **b)** A digital signal protocol for efficient transport of both constant-rate and bursty information in broadband digital networks.

AT&T – Consumer electronics manufacturer and long distance telephone, television, and data carrier. Its Bell Labs has worked on the development of ATV systems.

ATAPI (Advanced Technology Attachment Packet Interface) – An interface between a computer and its internal peripherals such as DVD-ROM drives. ATAPI provides the command set for controlling devices connected via an IDE interface. ATAPI is part of the Enhanced IDE (E-IDE) interface, also known as ATA-2. ATAPI was extended for use in DVD-ROM drives by the SFF 8090 specification.

ATC – See Ancillary Timecode.

ATC (Adaptive Transform Coding) – A method used to encode voice transmissions using only 16 kpbs.

ATC (American Television and Communications) – Time Inc.'s CATV multiple system operator (MSO), a co-proposer with HBO of C-HDTV and a supporter of ACTV.

ATEL (Advanced Television Evaluation Laboratory) – World-unique facility for conducting subjective assessments of picture quality for advanced television, digital video and multimedia services delivered using a wide range of formats, from low resolution to high-definition television (HDTV) and three-dimensional television (3D-TV).

A-Time (Absolute Time) – Elapsed time, referenced to the program start (00:00:00), on a DVD. A-time is measured in minutes, seconds and frames.

ATM – See Asynchronous Transfer Mode.

ATM Cell – An ATM packet of 53 bytes, 5 bytes for the header, 48 bytes payload.

ATM Forum – An international body of technical representatives defining ATM as a delivery mechanism, including ATM-based transfer, switching and management.

A-to-D Converter – a) A circuit that uses digital sampling to convert an analog signal into a digital representation of that signal. An ADC for digitizing video must be capable of sampling at 10 to 150 million samples per second (MSPS). b) Converts analog voltages and currents to the digital representation used by computer systems. This enables the computer to sense real-world signals.

ATR (Audiotape Recorder) – A device for recoding and reproducing sound on magnetic recording tape.

ATRAC (Adaptive Transform Acoustic Coding) – An algorithm that splits an audio signal into three non-uniform sub-bands.

ATRP (Advanced Television Research Program) – ATRP was established at MIT in 1983 by a consortium of U.S. companies. The major objectives of the ATRP are: to develop the theoretical and empirical basis for the improvement of existing television systems, as well as the design of future television systems; to educate students through television-related research and development and to motivate them to undertake careers in television-related industries; to facilitate continuing education of scientists and engineers already working in the industry; to establish a resource center to which problems and proposals can be brought for discussion and detailed study; to transfer the technology developed from this program to the industries.

ATSC – See Advanced Television Systems Committee.

ATSC A/49 – Defines the ghost cancellation reference signal for NTSC.

ATSC A/52 – Defines the (Dolby Digital) audio compression for ATSC HDTV.

ATSC A/53, A/54 – Defines ATSC HDTV for the USA.

ATSC A/57 – Defines the program, episode, and version ID for ATSC HDTV.

ATSC A/63 – Defines the method for handling 25 and 50 Hz video for ATSC HDTV.

ATSC A/65 – Defines the program and system information protocol (PSIP) and ATSC HDTV.

ATSC A/70 – Defines the conditional access system for ATSC HDTV.

ATSC A/90 – Defines the data broadcast standard for ATSC HDTV.

ATSC A/92 – Defines the IP multicast standard for ATSC HDTV.

Attack – In audio terms, the beginning of a sound. What type of attack a sound has is determined by how long it takes for the volume of the sound to go from silence to maximum level. It is critical to consider the attack time of sounds when applying processing Compression, gating, and other types of processors as they may destroy a sound's attack, changing the character and quality of the audio. Reverbs can also be affected by attack time; careful use of a 'reverb's predelay parameter will allow you to optimize the reverb for different types of attacks.

ATTC (Advanced Television Test Center) – Created by seven broadcasting organizations to test different broadcast ATV systems. See also Cable Labs.

ATT-C (AT&T Communications) – The Long distance arm of AT&T.

Attenuation – A decrease in the level of a signal is referred to as attenuation. In some cases this is unintentional, as in the attenuation caused by using wire for signal transmission. Attenuators (circuits which attenuate a signal) may also be used to lower the level of a signal in an audio system to prevent overload and distortion.

Attenuator – A circuit that provides reduction of the amplitude of an electrical signal without introducing appreciable phase or frequency distortion.

Attic Folder – The folder containing backups of your files or bins. Every time you save or the system automatically saves your work, copies of your files or bins are placed in the attic folder, until the folder reaches the specified maximum. The attic folder copies have the file name extension.bak and a number added to the file name. The number of backup files for one project can be changed (increased or decreased) in the Bin Settings dialog box.

Attribute Clip – A mechanism that applications can use to store supplemental information in a special track that is synchronized to the other track in a track group.

ATV – See Advanced TV.

AU – See Access Unit.

Audio – a) Signals consisting of frequencies corresponding to a normally audible sound wave ranging between the frequencies of 20 Hz to 20,000 Hz. **b)** A DC signal with varying amounts of ripple. It is sometimes possible to see the ripple on the DC signal to convey information of widely variable degrees of usefulness. **c)** The sound portion of a program.

Audio Balanced Signals – These are signals with two components, equal in amplitude but opposite in polarity. The impedance characteristics of the conductors are matched. Current practices designate these as non-inverted and inverted, + and – or positive and return. Interconnect cables usually have three conductors. Two arranged as a twisted pair, carry the non-inverted and inverted. By employing a twisted pair of conductors for the signal leads, the loop area responsible for magnetic interference is minimized. The third conductor is a shield.

Audio Bandwidth – The range of audio frequencies which directly influence the fidelity of the audio. The higher the audio bandwidth, the better the audio fidelity. The highest practical frequency the human ear can normally hear is 20 kHz. An audio amplifier that processes all frequencies equally (flat response to 20 kHz) and a reasonably high signal to noise ratio, will accurately amplify the audio signal.

Audio Breakaway (ABKW) – The ability to independently select audio sources regardless of which video source is selected, even though the audio is normally associated with a particular video (as opposed to follow).

Audio Buffer – A decoder buffer for storage of compressed audio data.

Audio Channel Number – These are consecutive numbers assigned to the Audio channel of the audio stream. They range from "0" to "7" in the description are of the video title set manager area. ACH0 and ACH1 are assigned to left channel and right channel respectively for two-channel stereo audio signals.

Audio Coding Mode – In general this is often used to show an audio coding method such as linear PCM, AC-3 or MPEG audio, etc., but in some contexts it refers to the channel constitution in AC-3 tracks and the speaker layout.

Audio Control Packet – Transmitted once per field in the second horizontal ancillary data space after the vertical interval switch point. It contains information on audio frame number, sampling frequency, active channels, and relative audio-to-video delay of each channel. Transmission of audio control packets is optional for 48 kHz synchronous operation and required for all other modes of operation.

Audio Dub – Process which allows for the replacement of an audio signals on a previously recorded tape without disturbing the video signal.

Audio Editing – Portions of the audio material are combined and recorded onto the videotape. Examples include creating a sound track that includes signals such as background music, voice narration or sound effects.

Audio Effects Board – Similar to a switcher, an audio effects board is the primary router and mixer for source audio, and for adjusting, mixing and filtering audio. Usually, a digital audio workstation is used to perform more complex audio work.

Audio Follow Video (AFV) – Audio selections made simultaneously upon selection of associated video sources (as opposed to audio breakaway).

Audio Level Measurements – Typically within audio measurements a dBm value is specified. This means that a reference power of 1 mW was used with a 600 W termination. Therefore using the equations 0 dBm is equivalent to a voltage of 0.775 V into a 600 W load. You may encounter several different types of dB measurements used within audio. The following list indicates the typically used equations.

dBm = 10 logP1/.001W

dBV = 20 logV2/1V rms

dBu = 20 log V2/775mV rms

dBSPL = 20 logP1/P2

Audio Levels – The level of the audio signal in either voltage or current. Audio levels are measured and indicated by mechanical VU-meters or electronic LED bar graph meters. It is important to maintain the proper audio level. If the audio level is too high when recording, overload of the input electronics and audio distortion will result. When audio levels are low, the signal-to-noise ratio is compromised.

Audio Matrix – That portion of the switcher electronics used to switch audio sources. Usually this matrix is controlled by AFV selections on the primary matrix, ABKW selections on an aux audio bus, or by an external editor or computer control.

Audio Menu – Menu used to select the audio stream.

Audio Mixer – A component that combines more than one sound input for composite output.

Audio Mixing – The blending of two or more audio signals to generate a combined signal which is often used for audio dub. During video processing, audio mixing may be used to insert narration or background music.

Audio Modulation – A carrier is modified with audio information and is mixed with the video information for transmission.

Audio Modulation Decoders – Converts sound carrier elements of the video waveform into left and right audio channels for stereo monitoring.

Audio Modulation Monitors – Displays sound carrier elements of the video waveform.

Audio On ISDN – Through use of the MPEG audio specification, the ISDN (Integrated Services Digital Network) may be tuned into an audio transmission media. Data compression techniques like MPEG Layer II allow a tailored mix of cost and quality, and are now thought of implicitly when talking audio on ISDN.

Audio Scrub – See Scrubbing

Audio Sequence – A series of audio frames with the same global parameters.

Audio Signals – XLR connectors provide dual-channel audio signals. The left channel can be set to click as a means of easily distinguishing the left channel from the right channel in audio tests.

Audio Stream Number – These are consecutive numbers assigned to the Audio streams for a Title in a VTS. These range from `0' to `7' in the order described in the video title set manager area. For menus the number of audio streams is limited to 0 or 1.

Audio Subcarrier – A specific frequency that is modulated with audio data before being mixed with the video data and transmitted.

Audio Subframe – There are 100 subframes of audio for every frame of video.

Audio Sweetening – The mixing of sound effects, music and announcer audio tracks with the audio track of the edited master tape, usually during the mixing stages of a production. Also called Audio Post-Production for Video.

Audio Timecode – Longitudinal timecode (LTC) recorded on an audio track.

Audio Visual Objects (AV Objects) – An AV object is a representation of a real or virtual object that can be manifested aurally and/or visually. AV objects are generally hierarchical, in that they may be defined as composites of other AV objects, which are called sub-objects. AV objects that are composites of sub-objects are called compound AV objects. All other AV objects are called primitive AV objects.

Audio Visual Scene (AV Scene) – A set of media objects together with scene description information that defines their spatial and temporal attributes including behavior resulting from object and user interaction.

Audio/Video Mixer – A single electronic component that consists of an audio mixer and a video mixer, switcher, or special effects generator. Also called an A/V Mixer.

Audio-Follow-Video – During video recording or editing, the video signal is usually accompanied by its associated audio signal. While editing video, it is sometimes necessary to separate the audio and video signals. Audio-follow-video mixers allow the audio to, or not to follow the video when switching video signals.

AudioVision – A registered trademark of Avid Technology, Inc. A digital, nonlinear audio editing system that locks digital video in sync with audio for audio editing and sweetening.

Auditory Masking – Auditory masking is used in MPEG and Dolby Digital compression, and is coded based on the range of frequency that human ears can detect. A phenomenon that occurs when two sounds of similar frequencies occur at the same time. Because of auditory masking, the louder sound drowns out the softer sound and makes it inaudible to the human ear.

Augmentation Channel – A transmission channel carrying information that can augment that being transmitted in an ordinary transmission channel such that a special television set that can receive both channels can get a better picture than those available from the main channel alone. Some ATV schemes require the augmentation channel to be adjacent to the main channel. Others can theoretically accept a non-adjacent augmentation channel, though, at the time of this writing, the acceptability of non-adjacent channels has not been proven to everyone's satisfaction.

Authoring – The encoding of material from various sources, all the conversion processes of the encoded data, incorporating the required control structures and other signals for playback sequences in the DVD-video format. The final product of authoring is a DLT tape with DVD image files in DDP format.

Authoring Platform – Computer hardware and software used to create material for use on a multimedia system. The video quality of the authoring platform has to be high enough that the playback equipment is the limiting factor.

Authoring System – Software, which helps developers design interactive courseware easily, without the painstaking detail of computer programming.

Auto Assembly – a) Process of assembling an edited videotape on a computerized editing system under the control of an edit decision list (EDL). A computer automatically conforms source footage into an edited video program under the direction of a list of preprogrammed edit instructions. **b)** An edit in which an off-line edit decision list is loaded into an on-line edit computer and all the edits are assembled automatically with little or no human intervention. **c)** The automatic assembling of an edited video tape on a computerized editing system (controller), based on an edit decision list (EDL).

Auto Iris (AI) – An automatic method of varying the size of a lens aperture in response to changes in scene illumination.

Automated Measurement Set – Device that automatically performs tests on audio and video signals and generates pass/fail results by testing the signals against predetermined parameters.

Automatic – In recorders, refers to either electrical or mechanical automatic bias switching devices.

Automatic Color Correction (ACC) – A circuit found in many consumer viewing devices that attempts to compensate for the "Never Twice the Same Color" broadcast problems. This circuit can go far beyond the Auto Tint function in that it changes color saturation as well as type of color. In most cases where ACC is present, it cannot be defeated. Adjusting the color and tint controls, using the SMPTE Color Bar pattern and the blue filter will result in a gross misadjustment of color level on the set. The color level may have to be reduced by as much as half the value calibrated with the SMPTE Color Bar pattern.

Automatic Focus – A feature on most consumer and industrial video cameras and camcorders that automatically makes minor focal length adjustments, thus freeing the videographer from focusing concerns.

Automatic Frequency Control (AFC) – Automatic frequency control. Commonly used to lock onto and track a desired frequency.

Automatic Gain Control (AGC) – a) Circuitry used to ensure that output signals are maintained at constant levels in the face of widely varying input signal levels. AGC is typically used to maintain a constant video luminance level by boosting weak (low light) picture signals electronically. Some equipment includes gain controls that are switchable between automatic and manual control. **b)** Electronic circuitry that compensates for either audio or video input level changes by boosting or lowering incoming signals to match a preset level. Using AGC, changing input levels can output at a single constant setting. **c)** A feature on most video cameras and camcorders that, when engaged, boosts the signal to its optimum output level. Automatic gain control (AGC) is available for video, and less frequently audio use.

Automatic Iris – A feature on most video cameras and camcorders that automatically creates the lens aperture that allows the imaging device to perform under optimum conditions.

Automatic Level Control (ALC) – Circuitry used to automatically adjust the audio recording level to compensate for variations in input volume. Some equipment includes level controls that are switchable between automatic and manual control.

Automatic Picture Stop – The disc player will automatically take the program from the play mode to a still frame mode according to information programmed in the vertical interval of the disc's video.

Automatic Retransmission Tool (ARQ) – One of the error correction tools of the Protection Layer. This tool is used to correct errors detected by the error detection tool by requesting retransmission of the corrupted information. A bidirectional connection is necessary in order to use ARQ.

Automatic Route Selection – An important part of an automatic least-cost routing system.

Automatic Shut-Off – A device (usually a mechanical switch) incorporated into most tape recorders that automatically stops the machine when the tape runs out or breaks.

Auto-Pan – A feature exclusive to AVC series switchers causing a positioned pattern to center itself as it grows in size.

AutoSave – A feature that saves your work at intervals you specify. Backups are placed in the attic folder.

Auto-Transition – a) The ability to electronically simulate a fader motion over an operator specified duration. b) An automatic transition where the motion of the switcher lever arm is electronically simulated when the AUTO TRANS push-button is pressed. The duration of the transition in television frames or seconds is indicated by the rate display LED.

AUX (Auxiliary Track) – In a video editing system, a channel reserved for connecting an external audio device, video device or both.

Auxiliary Bus – A bus which has the same video sources as the switcher but whose crosspoints may be remotely controlled, independently of the switcher console.

Auxiliary Channel (AUX) – In a video editing system, a channel reserved for connection to an external audio and/or video device.

Available Bitrate (ABR) – An ATM service that allows users to access unused network capacity.

AVI (Audio Video Interleaved) – The Video for Windows® file format for digital video and audio. An AVI (.avi) file is a RIFF file format used with applications that capture, edit and playback audio/video sequences. AVI files contain multiple streams of different types of data. Most AVI sequences will use both audio and video data streams. Specialized AVI sequences might include control track as an additional data stream. See Video for Windows®.

Avid Disk – The disk on the Macintosh platform that contains the operating system files. The computer needs operating system information in order to run.

Avid Projects Folder – The folder containing your projects.

A-Vision – An ATV system proponent.

AVK (Audio Video Kernel) – DVI system software designed to play motion video and audio across hardware and operating system environments.

AVO – See Audio Visual Objects.

AVR (Avid Video Resolution) – The compression level at which visual media is stored by the Avid system. The system creates media in a particular AVR using proprietary conversion algorithms to convert analog video to digital form.

AVSS (Audio-Video Support System) – DVI system software for DOS. It plays motion video and audio.

AWG (American Wire Gauge) – A wire diameter specification based on the American standard. The smaller the AWG number, the larger the wire diameter.

AWGN (Additive White Gaussian Noise) – This is an additive noise source in which each element of the random noise vector is drawn independently from a Gaussian distribution.

Axis – a) An imaginary line through the video image used as a reference point for rotation and movement. The three axes are H (horizontal), Y (vertical) and A (depth). b) The component of an object that you use to determine its two or three dimensional space and movement.

Azimuth – The angle of a tape head's recoding gap relative to the tape.

Azimuth Alignment – Alignment of the recoding and reproducing gaps so that their center lines lie parallel with each other and at right angles to the direction of head/tape motion. Misalignment of the gaps causes a loss in output at short wavelengths. For example, using a track width of 50 mils, a misalignment of only 0.05 degrees will cause a 3 dB loss at a wavelength of 0.1 mil.

Azimuth Loss – High frequency losses caused by head misalignment.

▶ B

B Bus – The bottom row of the two rows of video source select buttons associated with a given mixed effect (M/E).

BAB (Binary Alpha Blocks) – Binary shapes coded into blocks 16 pixels square, like the macroblock used for textures, are known as binary alpha blocks (BABs). There are three classes of block in a binary mask; those where all pixels are transparent (not part of the video object); those where all pixels are opaque (part of the video object); and those where some pixels are transparent and other opaque.

Baby Bell – A term commonly used for one of the seven regional holding companies established when AT&T divested itself of its local telephone companies. The Baby Bells are: American, Bell Atlantic, Bell South, Nynex, Pacific Telesis, Southwestern Bell, and US West.

Back Focus – a) A physical repositioning of the CCD, the camera element that translates light into electronic pulses for recording on videotape. The effect is to lengthen or shorten the distance between the lens and the CCD. **b)** A procedure of adjusting the physical position of the CCD-chip/lens to achieve the correct focus for all focal length settings (especially critical with zoom lenses).

Back Haul – Long distance digital data transport service such as Sonet, SDH or Telecos.

Back Hauler – Company that provides back haul services.

Back Light – a) A switch on some camcorders used to compensate exposure for situations where the brightest light is coming from behind the subject. **b)** A light source that illuminates a subject from behind, used to separate the subject from the background and give them depth and dimension.

Back Porch – a) The portion of the video signal that lies between the trailing edge of the horizontal sync pulse and the start of the active picture time. Burst is located on the back porch. **b)** The back porch of a horizontal synchronizing pulse is that area from the uppermost tip of the positive-going right-hand edge of a sync pulse to the start of active video. The back porch of a color video sync pulse includes the 8 to 9 cycles of reference color burst. The back porch is at blanking level.

Back Porch Tilt – The slope of the back porch from its normal horizontal position. Positive or negative refer respectively to upward or downward tilt to the right.

Back Time – Calculation of a tape in-point by finding the out-point and subtracting the duration of the edit.

Back Up – To copy a certain set of files and directories from your hard disk to a tape or other non-volatile storage media.

Backbone – Transmission and switching equipment that provides connections in distributed networks.

Backcoating – A conductive additional coating used on the reverse side of magnetic tape to control mechanical handling and minimize static generation.

Background – May be thought of as the deepest layer of video in a given picture. This video source is generally selected on a bus row, and buses are frequently referred to as the background source.

Background Generator – A video generator that produces a solid-color output which can be adjusted for hue, chroma, and luminance using the controls in the MATTE/BKGD control group.

Background Transition – A transition between signals selected on the Preset Background and Program Background buses, or between an "A" bus and "B" bus on an M/E.

Background Video (BGD) – a) Video that forms a background scene into which a key may be inserted. Background video comes from the Preset Background and/or Program Background bus or from an N/E "A" or "B" bus. **b)** A solid-color video output generated by the color Background generator within the switcher for use as background video.

Backhaul – In television, the circuits (usually satellite or telephone) used to transmit or "haul" a signal back from a remote site (such as a sports stadium) to a network headquarters, TV station or other central location for processing before being distributed.

Backplane – The circuit board that other boards in a system plug into. Usually contains the system buses. Sometimes called a Motherboard.

Back-Timing – a) Timing of a program from the end to the beginning. A reversal of clock-order so that remaining time or time left to the end of the program can be easily seen. **b)** A method of calculating the IN point by subtracting the duration from a known OUT point so that, for example, music and video or film end on the same note.

Backup – A duplicate copy of a file or disk in another location if the original file or disk becomes corrupted. See also Attic Folder.

Backup Tape – A tape that contains a copy of a set of files and directories that are on your hard disk. A full backup tape contains a copy of all files and directories, including IRIX, which are on your hard disk.

Backward Compatibility – A new coding standard that is backward compatible with an existing coding standard if existing decoders (designed to operate with the existing coding standard) are able to continue to operate by decoding all or part of a bit stream produced according to the new coding standard.

Backward Motion Vector – A motion vector that is used for motion compensation from a reference picture at a later time in display order.

Backward Prediction – Prediction from the future reference vop.

Baffles – Sound absorbing panels used to prevent sound waves from entering or leaving a certain space.

Balanced Cable – In audio systems, typically refers to a specific cable configuration that cancels induced noise.

Balanced Line – A line using two conductors to carry the signal, neither of which is connected to ground.

Balanced Signal – a) A video signal is converted to a balanced signal to enable it to be transmitted along a "twisted pair" cable. **b)** In CCTV this refers to a type of video signal transmission through a twisted pair cable. It is called balanced because the signal travels through both wires, thus being equally exposed to the external interference, so by the time the signal gets to the receiving end, the noise will be cancelled out at the input of a differential buffer stage.

Balun – A device used to match or transform an unbalanced coaxial cable to a balanced twisted pair system.

Banding – The presence of extraneous lines.

Bandpass Filter – Circuit that passes a selected range of frequencies.

Bandwidth – The range of frequencies over which signal amplitude remains constant (within some limits) as it is passed through a system. More specific definitions include: **a)** The difference between the upper and lower limits of a frequency, often measured in megahertz (MHz). **b)** The complete range of frequencies over which a circuit or electronic system can function with less than a 3 dB signal loss. **c)** The information carrying capability of a particular television channel. **d)** A measure of information capacity in the frequency domain. The greater the bandwidth of a transmission channel, the more information it can carry. **e)** In television, bandwidth is usually expressed in MHz.

Bandwidth Efficient – Phrase sometimes used to describe techniques to carry the maximum amount of picture information within a prescribed bandwidth; also, name applied to one MIT ATV proposal that would transmit only the spatio-temporal resolution necessary for a particular scene. For example, it would transmit no more than 24 frames per second when showing a movie shot at that rate.

Bandwidth Limiting – A reduction in the effective bandwidth of a signal, usually to facilitate recording, transmission, broadcast, display. etc. The reduction is usually accomplished through the action of an algorithm, which may involve simple lowpass filtering, more complex processing such as interleaving or quadrature modulation, or complete resampling. The term bandwidth limiting is normally applied in analog systems, although it also has a comparable meaning in digital systems.

Bandwidth Segmented Orthogonal Frequency Division Multiplexing (BST-OFDM) – Attempts to improve on COFDM by modulating some OFDM carriers differently from others within the same multiplex. A given transmission channel may therefore be "segmented", with different segments being modulated differently.

Bandwidth, Monitor – Monitor bandwidth is proportional to the speed at which a monitor must be turned on and off to illuminate each pixel in a complete frame and is proportional to the total number of pixels displayed. For example, a monitor with a resolution of 1000 x 1000 pixels which is refreshed at 60 times a second, requires a minimum theoretical bandwidth of over 45 MHz. Once overhead is considered for scanning and small spot size, the bandwidth could be as much as 100 MHz.

BAP (Body Animation Parameters) – Set of parameters used to define and to animate body objects. See also BDP.

Bar Code – A pattern of vertical stripes of varying width and spacing that encodes information. Bar codes can be used to encode timecode on film.

Bark – An audio measure in units of critical band rate. The Bark Scale is a non-linear mapping of the frequency scale over the audio range. It closely corresponds to the frequency selectivity of the human ear across the band.

Barn Doors – a) Two- or four-leafed metal blinders mounted onto lights to control brightness or direction. **b)** A term used in television production to describe the effect that occurs when a 4:3 image is viewed on a 16:9 screen. Viewers see black bars (barn doors) on the sides of the screen.

Base – See Radix.

Base Bandwidth – The amount of bandwidth required by an unmodulated signal, such as video or audio. In general, the higher the quality of the signal, the greater the base bandwidth it requires.

Base Board – Printed circuit board (and mounted components such as integrated circuits, etc.) that is inserted into the computer's expansion slot. A module board is often attached to the base board.

Base Film – For magnetic tapes, the plastic substrate that supports the coating. The base film of most precision magnetic tape is made of polyester.

Base Film Thickness – The thickness of the polyester material used for magnetic tape, varying from 0.24 mil in C120 cassette tape to 1.5 mil for audio mastering tape and instrumentation tape.

Base Layer – The minimum subset of a scalable hierarchy that can be decoded.

Baseband – a) Refers to the composite video signal as it exists before modulating the picture carrier. Not modulated. Composite video distributed throughout a studio and used for recording is at baseband. **b)** Video and audio signals are considered to be "prime", or baseband. Video and audio can be broken down into more basic elements, but those elements no longer constitute the desired signal as a single element. Baseband video and audio signals are often AM or FM modulated onto a carrier frequency, so that more than one set of "prime" signals can be transmitted or recorded at the same time. **c)** In DTV, baseband also may refer to the basic (unmodulated) MPEG stream.

Baseband Signal – A baseband signal is an analog or digital signal in its original form prior to modulation or after demodulation.

Baseline IRD – An IRD (Integrated Receiver Decoder) which provides the minimum functionality to decode transmitted bitstreams. It is not required to have the ability to decode Partial Transport Streams (TS) as may be received from a digital interface connected to digital bitstream storage device such as a digital VCR.

Baseline Restorer – An information processing unit intended to remove the DC and low order frequency distortion terms that result from use of record/reproduce transfer function which cannot pass DC in conjunction with a binary code that requires low frequency response to DC (i.e., zero frequency) for accurate recovery of such a code.

Baseline Shift – A form of low-frequency distortion resulting in a shift in the DC level of the signal.

BASIC – An easy-to-learn, easy-to-use language, which is available on most microcomputer systems.

Basic Cable Service – Package of programming on cable systems eligible for regulation by local franchising authorities under 1992 Cable Act, including all local broadcast signals and PEG (public, educational and government) access channels.

Basic Rate – ISDN's basic rate interface (BRI) consists of two B-channels (128 kbps) and a D-channel (data) of 16 kbps.

BAT (Body Animation Table) – A downloadable function mapping from incoming Body Animation Parameters (BAPs) to body surface geometry that provides a combination of BAPs for controlling body surface geometry deformation.

BAT (Bouquet Association Table) – a) The BAT provides information regarding bouquets (collections of services marketed as a single entity). **b)** A table describing a bouquet of programs offered by a broadcaster. DVB only.

Batch Capture – a) Combining your video capture card with deck control so that you can define your in and out points first, then capture only the footage you want. **b)** The automated process of capturing clips in a list. See Batch List.

Batch Digitize – The automated process in which groups of clips, sequences, or both are digitized (recorded digitally).

Batch List – A list of clips to be batch captured.

Batch Record – The automated process in which groups of clips, sequences, or both are digitized (recorded digitally).

Baud – A unit of signaling speed equal to the number of signal events per second. Baud is equivalent to bit per second in cases where each signal event represents exactly one bit. Often the term baud rate is used informally to mean baud, referring to the specified maximum rate of data transmission along an interconnection. Typically, the baud settings of two devices must match if the devices are to communicate with each other.

Baud Rate – a) The speed (calculated as bits per second) at which the computer sends information to a serial device, such as a modem or terminal. **b)** Measure of data flow: the number of signal elements per second. When each element carries one bit, the baud rate is numerically equal to bits per second (BPS). For example, teletypes transmit at 110 baud. Each character is 11 bits, and the TTY transmits 10 characters per second. **c)** The rate at which data is transmitted. The baud rates must match if two devices are to communicate with each other. **d)** The number of electrical oscillations that occur each second. Baud was the prevalent measure for bandwidth or data transmission capacity, but bps (bits per second) is used most often now and is more accurate.

BB – See Baseband.

BBC – See British Broadcasting Corporation.

BCH (Broadcast Channel) – The broadcast channel is a downlink UMTS (Universal Mobile Telecommunication System) transport channel that is used to broadcast cell and system information.

BCA (Burst Cutting Area) – A circular section near the center of a DVD disc where ID codes and manufacturer information can be inscribed in bar-code format.

BCD (Binary Coded Decimal) – A 4-bit representation of the 10 decimal digits "0" through "9". Six of the sixteen possible codes are unused. Two BDC digits are usually packed into one byte.

BCDM (Broadcast Cable Digital Multiplexer) – Provides off-line multiplexing of existing transport streams and TSMF information in order to produce ISDB-C streams (TSMF streams). It can also be used to demultiplex existing TSMF streams and enables the TSMF information to be edited.

B-Channel – A "bearer" channel in ISDN user-to-network interfaces carrying 64 kbps of digitized voice, video or data.

BDP (Body Definition Parameters) – Set of parameters used to define and to animate body objects. See also BAP.

BDR – See Border.

Beam – The directed flow of bombarding electrons in a TV picture tube.

Beam-Splitter Prism – The optical block in a video camera onto which three CCD sensors are mounted. The optics split the red, green and blue wavelengths of light for the camera.

Bearding – An overloading condition in which highly saturated or white areas of a television picture appear to flow irregularly into darker areas.

Beat Frequency – The difference between color subcarrier frequency and sound subcarrier frequency, expressed in Hz.

Beats – Variation in the amplitude of a mixture of two signals of close frequency as a result of constructive and destructive interference.

Bel – A measure of voltage, current or power gain. One bel is defined as a tenfold increase in power. If an amplifier increases a signal's power by 10 times, its power gain is 1 bel or 10 decibels (dB). If power is increased by 100 times, the power gain is 2 bels or 20 decibels. 3 dB is considered a doubling.

Bell Labs – Originally Bell Telephone Laboratories, the research arm of the Bell System. When AT&T divested itself of its regional telephone companies, Bell Labs was split. One division, still called Bell Labs, belongs to AT&T and is a proponent of a particular ATV system (SLSC). The other division, called Bellcore for short, belongs to the Bell regional holding companies (RHC) and is, among many other R&D projects, investigating mechanisms for reducing the bit rate of digital video transmission, which may be applicable to ATV. Bellcore has formed a joint venture with NHK for HDTV research.

Bellcore – See Bell Labs.

Benchmark – Method used to measure performance of a computer in a well-defined situation.

Bento – A registered trademark of Apple Computer, Inc. A general container format and software API (application programming interface). Bento is used by OMF interchange as a storage and access system for the information in an OMF interchange file.

BEP (Bit Error Probability)

BER – See Bit Error Rate.

Best Light – A telecine transfer performed with optimum settings of the color grade controls but without precise scene-by-scene color correction.

Betacam, SP – A superior performance version of Betacam, that uses metal particle tape and a wider bandwidth recording system. The interconnect standard is the same as Betacam, and there is also limited tape interchangeability with standard Betacam,.

Betacam, SX – A digital tape recording format developed by Sony which used a constrained version of MPEG-2 compression at the 4:2:2 profile, Main Level (422P@ML) using 1/2-inch tape cassettes.

Betacam, Betacam, Format – A camera/recorder system and related equipment originally developed by Sony, the name may also be used for just the recorder or for the interconnect format. Betacam, uses a version of the (Y, R-Y, B-Y) component set.

Betamax – Consumer videocassette record/playback tape format using half-inch wide magnetic tape. Developed by Sony, Betamax, was the first home VCR format.

Bezel – The frame that covers the edge of the picture tube in some TV sets and can therefore hide edge information transmitted in an ATV system (such as ACTV) not meant for the viewer to see. See also Overscanning.

Bézier – A curve that connects the vertices of a polygon; each vertex has two tangents, or handles, which you can use to adjust the slope of the adjacent curve or side of a polygon.

Bézier Spline – A type of smooth curve or surface bound to its control points, always passing through its first and last control point.

B-Frame (Bidirectional Frame) – The frame in an MPEG sequence created by comparing the difference between the current frame and the frames before and after it.

BG (Also BKG and BKGND) – See Background.

BH Loop Tracer – See BH Meter.

BH Meter – A device for measuring the intrinsic hysteresis loop of a sample of magnetic material. Usually, the sample is magnetized in a 60 Hz field supplied by a solenoid and the intrinsic flux is detected by integrating the emf produced in an opposing pair of search coils, one of which surrounds the sample. The hysteresis loop may be displayed on an oscilloscope by feeding the X and Y plates with voltages proportional to the magnetizing coil current and the integrated search coil emf respectively.

Bi O-L – Bi-Phase Level (Code). Also called Manchester (Code).

Bias – a) A steady-state signal applied to the tape (usually by a high frequency oscillation of 50 to 100,000 Hz or more) to minimize distortion and noise and increase frequency response and efficiency in recording. Every tape formulation has slightly different bias requirements. **b)** Current or voltage applied to a circuit to set a reference operating level for proper circuit performance, such as the high frequency bias current applied to an audio recording head to improve linear performance and reduce distortion.

Bias Adj. – The control which regulates the amount of bias mixed in with the signal to be recorded.

Bias Cal. – A control which calibrates the VU meter on a recorder so it reads 0 VU in the bias position of the output selector switch when bias is properly set.

Bias Switch – Switch used on cassette recorder to change the amount of bias current required for different types of tapes.

Bicubic Surface – A surface that you can add to a layer with four control handles that you can use for four-point tracking.

Bid Sheet – A written estimate, or quote, for video or production services.

Bidirectional – a) Indicates that signal flow may be in either direction. Common bidirectional buses are three-state or open collector TTL. **b)** In open reel or cassette recorders, the ability to play (and, in some cases, record) both stereo track pairs on a tape by reversing the tape's direction of motion without removing and replacing the tape reels or cassette.

Bidirectional Prediction – A form of compression in which the codec uses information not only from frames that have already been decompressed, but also from frames yet to come. The codec looks in two directions: ahead as well as back. This helps avoid large spikes in data rate caused by scene changes or fast movement, improving image quality. See Forward Prediction.

BIFS (Binary Format for Scenes) – a) Describes the spatio-temporal arrangements of the objects in the scene. **b)** BIFS provides a complete framework for the presentation engine of MPEG-4 terminals. BIFS enables to mix various MPEG-4 media together with 2D and 3D graphics, handle interactivity, and deal with the local or remote changes of the scene over time. BIFS has been designed as an extension of the VRML 2.0 specification in a binary form.

Big Endian – A process which starts with the high-order byte and ends with the low-order byte. Motorola 68000 processors used the big endian format.

Bi-Level Keyer – A keyer where two levels of hole cutting are independently adjustable. The top level, or insert, cuts a hole and fills with the key video. In a luminance key the second level forms the border of the key, and in a chroma key the second level forms the shadow. The second level has adjustable luminance allowing borders to be varied from black to white and shadows to be varied in density. This is the type of keying provided on all Ampex switchers.

Bilinear Surface – A surface that you can add to a layer with more than four control handles for creating non-linear effects.

BIM (Broadcast Interface Module)

Bin – A database in which master clips, subclips, effects and sequences are organized for a project. Bins provide database functions to simplify organizing and manipulating material for recording, digitizing and editing.

Binary – A base-2 numbering system using the digits 0 and 1 (as opposed to 10 digits, 0-9) in the decimal system). In computer systems, the binary digits are represented by two different voltages or currents, on corresponding to 0 and the other corresponding to 1. All computer programs are executed in binary form. Binary representation requires a greater number of digits than the base 10 decimal system more commonly used. For example, the base 10 number 254 is 11111110 in binary. The result of a binary multiplication contains the sum of digits of the original numbers. So,

in binary: 10101111 x 11010100 = 10010000011101100
in decimal:175 x 212 = 37,100

From right to left, the digits represent 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768. Each digit is known as a bit. This example multiples two 8-bit number to produce a 16-bit result, a very common process in digital television equipment.

Binary File – An executable file that contains a relocatable machine code program; in other words, a program ready to be run.

Binary Search – Technique in which the search interval is divided by two at every iteration.

Binary Shape – A bit map that indicates the shape of a video object plane (VOP).

Binaural Effect – The human ability to localize the direction from which a sound comes due to the fact that people have two ears.

Binder – On recording tape, the binder is usually composed of organic resins used to bond the oxide particles to the base material. The actual composition of the binder is considered proprietary information by each magnetic tape manufacturer. The binder is required to be flexible and still maintain the ability to resist flaking or shedding binder material during extended wear passes.

BIOP (Broadcast Inter-Object Request Broker Protocol) – Defines a way of exchanging information in a broadcast carousel environment about an object, including a directory and broadcast file systems and information on the object itself. BIOP message contains an internationally agreed method to exchange information about an object being broadcast in a carousel. The BIOP may also indicate how to use the object, including possibly providing the application software.

BIOS (Basic Input/Output System) – Settings for system components, peripherals, etc. This information is stored in a special battery-powered memory and is usually accessible for changes at computer startup.

Bi-Phase – Electrical pulses from the tachometer of a telecine, used to update the film footage encoder for each new frame of film being transferred.

Bi-Phase Sync – Bi-phase is an older synchronization technology used in the film industry. Typically, the clock was derived from a box that hung off of large film mag recorders. This box emitted a pulse that provided sync. Working with pulses alone, bi-phase sync did not provide location information, making it a rather limited solution.

Bipolar – A signal containing both positive-going and negative-going amplitude. May also contain a zero amplitude state.

Birefringence – a) An optical phenomenon where light is transmitted at slightly different speeds depending on the angle of incidence. **b)** Light scattering due to different refractions created by impurities, defects, or stresses within the media substrate.

B-ISDN (Broadband Integrated Services Digital Network) – A mechanism by means of which telephone companies will be able to carry television signals (and, probably ATV signals) digitally, probably via optical fibers. ISDN systems are considered broadband if they carry at least 45 Mbps, the DS3 rate, currently used for delivery of broadcast television signals. If and when B-ISDN reaches homes it will be a powerful competitor to other delivery mechanisms, potentially able to perform a computer-television function.

Bit (Binary Digit) – a) A single digit in a binary number. **b)** A binary representation of 1 or 0. One of the quantized levels of a pixel. **c)** An instruction in a data transmission, usually part of a word (byte) with high status = 1, and low status = 0. d) An eight-bit byte can define 256 brightness or color values.

Bit Bucket – Any device capable of storing digital data, whether it be video, audio or other types of data.

Bit Budget – The total amount of bits available on the media being used. In DVD, the bit budget of a single sided/single layer DVD5 disk is actually 4.7 GB.

Bit Density – See Packing Density.

Bit Depth – The number of levels that a pixel might have, such as 256 with an 8-bit depth or 1024 with a 10-bit depth.

Bit Error – The incorrect interpretation of a binary bit by a message processing unit.

Bit Error Rate (BER) – a) This term is used in High Density Digital Recording (HDDR), or High Density Recording (HDR), or other such names and refers to the number of errors a specific magnetic tape may contain, and is expressed in errors per data bits, such as one in 106 or one error in one million data bits. **b)** The average probability of a digital recording system reproducing a bit in error. Note: IEEE 100 defines error rate as "the ratio of the number of characters of a message incorrectly received to the number of characters of the message received". Bit error rates typical of current digital tape recording are: digital video tape, about 106; digital instrumentation tape, about 109; digital computer tape, about 1012.

Bit Packing Density – The number of bits recorded per track length unit, usually expressed in terms of kilobits per inch (KBPI) or bits per millimeter (BPMM).

Bit Parallel – Byte-wise transmission of digital video down a multi-conductor cable where each pair of wires carries a single bit. This standard is covered under SMPTE125M, EBU 3267-E and ITU-R BT.656 (CCIR 656).

Bit Plane – Video RAM containing formatted graphics data for VGA and SVGA systems where four or more bit planes can be addressed in parallel. A bit plane is sometimes called a map.

Bit Rate – a) The rate at which the compressed bit stream is delivered from the storage medium to the input of a decoder. The digital equivalent of bandwidth. **b)** The speed at which bits are transmitted, usually expressed in bit per second (IEEE 100). Video information, in a digitized image for example, is transferred, recorded, and reproduced through the production process at some rate (bits/s) appropriate to the nature and capabilities of the origination, the channel, and the receptor. **c)** The amount of data transported in a given amount of time, usually defined in Mega (million) bits per second (Mbps). Bit rate is one means used to define the amount of compression used on a video signal. Uncompressed D1 has a bit rate of 270 Mbps. MPEG-1 has a bit rate of 1.2 Mbps.

Bit Rate Reduction – a) Schemes for compressing high bit rate signals into channels with much lower bit rates. **b)** A reduction in the real-time transmission rate in digital format, usually to facilitate recording, transmission, broadcast, display, etc., or even to comply with fixed limitations. Various algorithms appropriate for video signals may be employed from arbitrary resampling to more complex processing with the objective of reducing the transmission of redundant information in the image and possibly eliminating image content that will not be obvious in the final specified display. Bit rate reduction is also appropriate and employed in audio records, either associated with video or standing alone.

Bit Rate, Real-Time – When the information is obtained from a continuously varying source, and the information is being transmitted continuously without buffering, it is exchanged at the real-time bit rate. Within the production sequence, it is actually only the image capture (i.e., camera and its recording system) that is required to be in real-time. The balance of production, including post-production operations, can be at a fraction of real-time if a more desirable result is achieved. (Subsequent to production, the final display must of course also be in real-time.)

Bit Rate, Recording – The bit rate required of a recorder mated to a video camera or functioning in the origination, post-production, or distribution is generally greater than the concurrent bit rate, real-time because of the error correction designed into the recording format. This "overhead" may increase the bit rate, sometimes by as much as one-third, and frequently sets a practical limit in systems design. Examples in the following table are intended only to clarify the definition. They indicate the range of some systems currently considered and a first estimate of their challenges.

Probable Recording Rate, Mbits/s (1, 2)

Bits Per Pixel	Maximum Levels Defined	CCIR Rec 601-2 (3) 4:2:2	CCIR Rec 601-2 (3) 4:4:4	CCIR Rec 709 (3) 4:2:2	CCIR Rec 709 (3) 4:4:4
8 (3)	256	227 (4)	340	1290	1940
10	1024	284	426	1610	2420
12	4096	340	510	1940	2910

(1) All systems postulated employ field rates of 60 or 59.94 Mbits/s, component encoding and 2:1 interlace. Progressive scan systems at the same frame rates would have double these bit rates.
(2) Estimates for gross data recording rates assume the same ratio of overhead to data bits in component format recording as that in the D-1 standard.
(3) CCIR Recommendations 601-2 and 709 document 8-bit and 10-bit sampling, based upon sampling frequencies that are integral multiples of 2.25 MHz (i.e., 13.5 MHz for Rec 601-2).
(4) The D-1 standard recording format is defined by SMPTE 224M and its related SMPTE Recommended Practices and Engineering Guidelines.

Bit Serial – Bit-wise transmission of digital video down a single conductor such as coaxial cable. May also be sent through fiber optics. This standard is covered under ITU-R BT.656 (CCIR 656).

Bit Slip – The condition in a message processing unit where the bit rate clock has gained (or lost) more than 180 degrees phasing with respect to synchronism with the binary message bits.

Bit Slippage – a) Occurs when word flaming is lost in a serial signal so that the relative value of a bit is incorrect. This is generally reset at the next serial signal, TRS-ID for composite and EAV/SAV for component. **b)** The erroneous reading of a serial bit stream when the recovered clock phase drifts enough to miss a bit. **c)** A phenomenon which occurs in parallel digital data buses when one or more bits gets out of time in relation to the rest. The result is erroneous data. Differing cable lengths is the most common cause.

Bit Specifications – Number of colors or levels of gray that can be displayed at one time. Controlled by the amount of memory in the computer's graphics controller card. An 8-bit controller can display 256 colors or levels of gray; a 16-bit controller, 64,000 colors; a 24-bit controller, 16.8 million colors.

Bit Stream (also Bitstream) – a) A continuous series of bits transmitted on a line. **b)** A binary signal without regard to grouping according to character.

Bit Synchronizer – An information processing unit intended to extract the binary message and associated bit rate clock included in a PCM signal.

BitBLT (Bit Block Transfer) – The transfer of blocks of screen data (rather than a byte at a time) from one place to another in memory. The microprocessor tells the graphic chip what block to move and where to put it. The graphics chip carries out this operation freeing the microprocessor to work on the next operation.

BITC – See Burn In Time Code.

Bitmap (BMP) – a) A bitmap is the digital representation of an image, in terms of pixel values. Storing an image as a bitmap is the most space-consumptive method of storing an image. **b)** An image consisting of an array of pixels that can be displayed on a computer monitor. **c)** A pixel-by-pixel description of an image. Each pixel is a separate element. Also a computer file format.

Bitmapped Graphics – Images, which are created with matrices of pixels, or dots. Also called Raster Graphics.

Bits Per Pixel (BPP) – The number of bits used to represent the color information of a pixel. One bit allows only two values (black and white), two bits allows four values, and so on. Also called color depth or bit depth.

Bit-Slice – Method that implements n-bits of the CPU on each of several chips, or slices, usually n=4. A bit-slice processor chip implements a complete data path across the CPU. A 32-bit processor could be constructed by using eight 4-bit CPU slices.

Bitstream Recorder – A device capable of recording a stream of digital data but not necessarily able to process the data.

Black (BLK) – A black video output generated within the switcher and selected by the Black push-buttons on the crosspoint buses and by the Fade to Black push-button in the downstream mixer.

Black A Tape – The process of recording a black burst signal across the entire length of a tape. Often done before recording edited footage on the tape to give the tape clean, continuous video and sync and to insure there is no video already on the tape.

Black and Code – Video black, timecode and control track that are prerecorded onto videotape stock. Tapes with black and code are referred to as striped or blacked tapes.

Black and White – Monochrome or luminance information. Monochrome means one color. In the color television system the black and white portion of the picture has to be one "color" gray, D6500, 6500°K as defined by x and y values in the 1939 CIE color coordinate system. The black and white signal in the S or Component video path is separate from the color information.

Black Box – A term used to describe a piece of equipment dedicated to one specific function, usually involving a form of digital video magic.

Black Burst – a) Black burst is a composite video signal consisting of all horizontal and vertical synchronization information, burst and in North America NTSC, setup. Also called "color black", "house sync" or "house black". Typically used as the house reference synchronization signal in television facilities. **b)** A composite color video signal. The signal has composite sync, reference burst and a black video signal, which is usually at a level of 7.5 IRE (50 mV) above the blanking level.

Black Compression – a) The reduction in gain applied to a picture signal at those levels corresponding to dark areas in a picture with respect to the gain at that level corresponding to the midrange light value in the picture. **b)** Amplitude compression of the signals corresponding to the black regions of the picture, thus modifying the tonal gradient.

Black Edits – a) A video source with no image. **b)** A special source you can fade into, out of, or use for other effects.

Black Level – a) This voltage defines the picture's black level. Video that dips below this level such as sync pulses are called blacker then black. **b)** Strictly interpreted, denotes the light level at which a video signal representing picture black is reproduced on your TV screen. In terms of light output from a TV set, black areas of the picture should be represented by an absence of light. Something that is black or below black in the video signal shouldn't produce any light from the display. **c)** Some TV sets actually use Black Level as a control name. It is a far better description of the function than the most commonly found name for it, Brightness. **d)** A part of the video signal, close to the sync level, but slightly above it (usually 20 mV – 50 mV) in order to be distinguished from the blanking level. It electronically represents the black part of an image, whereas the white part is equivalent to 0.7 V from the sync level.

Black Level Setup – Refer to the Setup discussion.

Black Level, Monitor – The luminance produced on the monitor display by a signal at reference black level. Since the monitor brightness control should be adjusted to align CRT beam cutoff with reference black level signal, this provides zero excitation light from the CRT (only room ambient light reflected from the CRT faceplate). Monitor black level is normally set by use of a pluge signal to adjust CRT beam cutoff subjectively.

Black Level, Reference – The video signal level which is intended to produce monitor black level in the reproduced image. In systems with a setup level, i.e., the 7.5 IRE setup in a 525/59.94/2:1/NTSC composite video documented by ANSI/EIA TIA 250-C and SMPTE 170M, reference black is at the setup level. In systems with no setup level, reference black is at blanking level.

Black Peak – The maximum excursion of the picture signal black direction at the time of observation.

Black Point – The luminance value in a video image that you set to be equal to reference black when making a color adjustment. Compare with White Point.

Black Stripe – See Striping.

Black to White Excursion – The excursion from reference black to reference white. Conventionally 92.5 IRE (37/56 V or 660 mV); System M and EIA-343A 100 IRE (or 700 mV) in other analog systems and codes 16-235 in component digital systems.

Black, Absolute – a) Optical black is no light. An absolute black can only be produced in a scene via a light-trap, "a black hole". **b)** A capped lens on the camera is the equivalent of an absolute scene black and should produce reference black level video signal from a properly adjusted studio camera.

Black, Projection – The luminance level in a projected image that is correlated with subjective scene black has two sources: in photographic and other light-modulating systems there will be luminance from whatever transmitted light passes through the maximum modulating density representing scene black, additional luminance may be produced by nominate-forming light (flare, room illumination, stray light, etc.).

Black, Subjective, Monitor – The luminance level which produces the perception of black on the monitor display. This subject has not been explored extensively, but Bartleson and Novick present evidence that it is relative to the high-light or white level, such that the luminance ratio to produce subjective black on a monitor is higher than that in a televised scene. They propose a luminance ratio of 100:1 for subjective white to black on TV monitors in a control room "dimly lighted". This luminance ratio specification has been formalized in SMPTE RP 166.

Black, Subjective, Scene – That fraction of the high-light luminance required in a scene reproduced on a television display to convey the perception of black. The luminance of subjective black on a CRT has been studied by Lowry and Jarvis, who measured luminances on the original scenes, and compared the subjective appearance on a CRT display, as evaluated by viewing audiences. They found that the perception of black depends on a great many factors both in the reproduced scene and in the viewing conditions such as average scene reflection, luminance of areas adjacent to the display, etc. In most situation, luminance levels of 1/40 to 1/60 of the highlight luminance produce the perception of black even though the scene luminance range may reach 200:1 or more. It follows then that a scene element that is perceived as black may not necessarily be at reference black level in a video signal.

Blacked Tapes – See Black and Code.

Blacker-than-Black – The amplitude region of the composite video signal below reference black level in the direction of the synchronizing pulses.

Blackout – The fading of a video signal to black to indicate, for example, the end of a show.

Blanket Fee – Typically used for musical selections. One who pays a blanket fee has permission to use the musical selection the fee covers in an unlimited number of released projects and videos.

Blanking – A video signal level below which no light should be emitted from a TV screen (the level at which the screen is blanked); also, that portion of the time that a video signal is transmitted when it is at or below blanking. These time portions can be divided into a horizontal blanking interval (HBI) and a vertical blanking interval (VBI). Since no picture information is carried in either blanking interval in an NTSC signal, various ATV schemes propose using them for carrying augmentation information, such as higher quality sound or widescreen panel information. Potentially conflicting with those schemes are other schemes that already use the blanking intervals for descrambling codes, test transmission, time code, and test and reference signals. Reducing the duration of the blanking intervals

to allow more picture information to be transmitted potentially conflicts with the demands of the scanning circuitry of older TV sets. Sometimes this conflict is said to be resolved by bezel coverage and overscanning.

Blanking (Picture) – The portion of the composite video signal whose instantaneous amplitude makes the vertical and horizontal retrace invisible.

Blanking Adjustment – A technique proposed in some ATV schemes to increase the VBI (and, sometimes, decrease the HBI) to deal with wide aspect ratios. See also Burn.

Blanking Interval – The horizontal blanking interval is the time between the end of one horizontal scanning line and the beginning of the next. The vertical blanking interval is the time between the end of one video field and the beginning of the next. Blanking occurs when a monitor's electron beam is positioned to start a new line or a new field. The blanking interval is used to instantaneously reduce the beam's amplitude so that the return trace is invisible.

Blanking Level – a) Refers to the 0 IRE level which exists before and after horizontal sync and during the vertical interval. This voltage level allows the electron beam to be turned off while it is being repositioned (retracing) across the face of the CRT into the position needed to start tracing the next visible line. **b)** The level of the front and back porches of the composite video signal. **c)** The level of a composite picture signal which separates the range containing picture information from the range containing synchronizing information. Note: This term should be used for controls performing this function (IEEE 100). **d)** The beginning of the video signal information in the signal's waveform. It resides at a reference point taken as 0 V, which is 300 mV above the lowest part of the sync pulses. Also known as pedestal, the level of a video signal that separates the range that contains the picture information from the range that contains the synchronizing information.

Blanking Panel – A piece of black plastic attached to the front plastic panel of the Indigo chassis that covers either the top or middle drive slot. The blanking panel is removed after installing a drive in the slot that it was covering.

Blanking Processor (Sync Proc) – A circuit on the video module which strips blanking sync and burst from the program output of the switcher and replaces it with blanking and sync from a reference source. This process ensures that sync and blanking do not contain any unwanted timing shifts, and the record VPR is always receiving constant relationships of sync, blanking and burst.

Blanking Stuffing – An ATV technique that adds information to blanking areas that is supposed to be invisible to ordinary sets but can be used by an ATV set for increased resolution and/or widescreen panels.

Blast Filter – A dense mesh screen on a microphone, which minimizes overload caused by loud, close sounds.

Bleach – a) Converting a metallic silver image to a halide or other salt which can be removed from the film with hypo. When bleaching is not carried to completion, it is called reducing. **b)** Any chemical reagent that can be used for bleaching.

Bleeding Whites – An overloading condition in which white areas appear to flow irregularly into black areas.

Blink – A modification to a key to cause it to flash on and off. The speed at which a key blinks.

Blitting – The process of using BitBLT to copy video data such as a bitmap from one area in memory to another.

Block – An 8-row by 8-column matrix of pels, or 64 DCT coefficients (source, quantized or dequantized). A block is the entity on which the DCT operates and it represents luminance or chrominance information. This term is used for both the actual picture information, and the corresponding DCT coefficients.

Block Companding – Digital representation of an audio signal that has been normalized within a certain time period.

Block Matching – A method of motion estimation. A search for the picture area that best matches a specific macro block of preceding and/or subsequent pictures.

Blockiness – An artifact that refers to the tile-like appearance of a compressed image where the 8 x 8 blocks have become visible due to a (too) hard compression.

Blocking – a) Occurs in a multistage routing system when a destination requests a source and finds that source unavailable. In a tie line system, this means that a destination requests a tie line and receives a tie line busy message, indicating that all tie lines are in use. **b)** Distortion of the received image characterized by the appearance of an underlying block encoding structure.

Blooming – a) This effect is sometimes called whiter-than-white. Blooming occurs when the white voltage level is exceeded and screen objects become fuzzy and large. **b)** The defocusing of regions of a picture where brightness is excessive.

BLT (Block Transfer) – The process of moving blocks of data from one place to another rather than a byte at a time in order to save processor time and to expedite screen display in operations such as vertical rolling of video.

Blue Aging – A tendency for blue phosphors to age more rapidly than red or green. See also Phosphor Aging.

Blue Book – The document that specifies the CD extra interactive music CD format (see also Enhanced CD). The original CDV specification was also in a blue book.

Blue Screen – A special effects procedure in which a subject is photographed in front of a uniformly illuminated blue or green background. A new background image can be substituted for the blue or green during the shoot or in post-production through the use of chroma key.

Blur – A state of reduced resolution. Blur can be a picture defect, as when a photograph is indistinct because it was shot out of focus or the camera was moved during exposure. Blur can also be a picture improvement, as when an unnaturally jagged-edged diagonal line or jerky motion is blurred to smoothness.

Blurring/Smearing – In a single frame (spatial example), reducing the number of pixels per horizontal line, causes a blurring or smearing effect. In multiple frames (temporal example), the causes become more complicated. They may include reduction of bandwidth, degree of image movement, algorithm type, and motion prediction/compensation techniques.

B-MAC – A MAC (Multiplexed Analog Component) with audio and data time multiplexed before modulation, which forms the basis for the HDB-MAC ATV scheme, currently used for satellite transmission and scrambling in the U.S.. See also MAC.

B-Mode – A "checkerboard" or non-sequential method of assembly. In B-mode, the edit decision list (EDL) is arranged by source tape number. The edit system performs all edits from the tapes currently assigned to decks, leaving gaps that will be filled by material from subsequent reels. See also A-Move, C-Mode, D-Mode, E-Mode, Source Mode.

B-Mode Edit – An editing method where the footage is assembled in the order it appears on the source reels. Missing scenes are left as black holes to be filled in by a later reel. Requires fewer reel changes and generally results in a faster edit session.

BMP – A bitmapped graphic files format for Windows which stores images as a grid of dots or pixels. The BMP file defines the size of the image, the number of color planes, and the palette used.

BNC – A cable connector used extensively in television and is an abbreviation that has several different meanings depending on who you ask. Four common meanings for BNC are listed below: **B**aby **N** **C**onnector, **B**ayonet **N**eill **C**oncelman Connector, **B**ritish **N**aval **C**onnector, and **B**ritish **N**ational **C**onnector.

Board – The audio console control in radio and television.

Board Fade – A radio term, used to designate the process of gradually fading the volume of sound by means of a master fading control on the board.

Board Tester – Product programmed to automatically stimulate the circuits on a PC board and check the responses. Electrical failures can be detected and diagnosed to facilitate board repair.

BOC (Bell Operating Company) – A local telephone company formerly owned by AT&T.

Book A – The document specifying the DVD physical format (DVD-ROM). Finalized in August 1996.

Book B – The document specifying the DVD-Video format. Mostly finalized in August 1996.

Book C – The document specifying the DVD-Audio format.

Book D – The document specifying the DVD record-once format (DVD-R). Finalized in August 1997.

Book E – The document specifying the rewritable DVD format (DVD-RAM). Finalized in August 1997.

Boolean – In digital picture manipulation, a method of working on polygonal objects.

Boolean Logic – Named after George Boole, who defined binary arithmetic and logical operations such as AND, OR, NOT, and XOR.

Boom – A mechanical cantilevering device used to hold a microphone closer to a set by positioning it above the set while keeping it out of view of the cameras.

Boot – To start up the system by turning on the workstation and monitor; the system is fully booted when you see a prompt or the login screen. Short for Bootstrap.

Boot Up – To start up. Most computers contain a system operating program that they load into memory from disk after power up or restart. The process of reading and running that program is called boot up.

Bootstrap – Program used to initialize the computer. Usually clears memory, sets up I/O devices, and loads the operating system.

Border – a) The boundary between two merged video pictures, as created with chroma key or wipe effects. **b)** May be thought of as the frame which surrounds a given pattern or key. In the case of a key, the border is on or two lines side, adjustable anywhere from black to white, and may be symmetrical about the key or to the right and bottom (drop shadow). An outline is a special key border where the insert video appears in the border area and the background video fills the hole where the insert would normally be. In the case of a pattern, the border is adjustable in width and color. A pattern border may be hard colored, soft colored (halo), or soft with no color. AVC switchers can also do half halo borders, hard on one side and soft on the other.

Border (Key) – A title (caption, super) enhancement option which produces a black or white border or dropshadow around a key or changes the key into a matte filled outline in the shape of the key. The Border, Dropshadow, and Outline push-buttons select these optional modes. If the Border option is not installed, these push-buttons do not function.

Border (Menu) – A function that uses ADO 100's internal key to place a border around the image and adjust width and color (saturation, luminance and hue).

Border (Wipe) – The boundary area between the "A" video and "B" video when doing a wipe, to which hard, soft, halo or 1/2 halo edges and matte color can be added.

Border Luminance – The brightness of a border.

Border Modify – A feature exclusive to AVC series switchers, allowing key borders to be extended to the right and bottom up to 14 lines deep. Several special key effects can be accomplished with this including delayed and decayed keys.

Border Modify (Key) – An enhancement to the basic key border function allowing up to 14 lines of dropshadow or reinserted insert video in a decaying mode. This uses a patented circuit which increases the creative possibilities.

Bottom Field – One of two fields that comprise a frame of interlaced video. Each line of a bottom field is spatially located immediately below the corresponding line of the top field.

Bounce – a) An unnatural sudden variation in the brightness of the picture. **b)** Oscillations and noise generated when a mechanical switch is opened or closed. See Debounce.

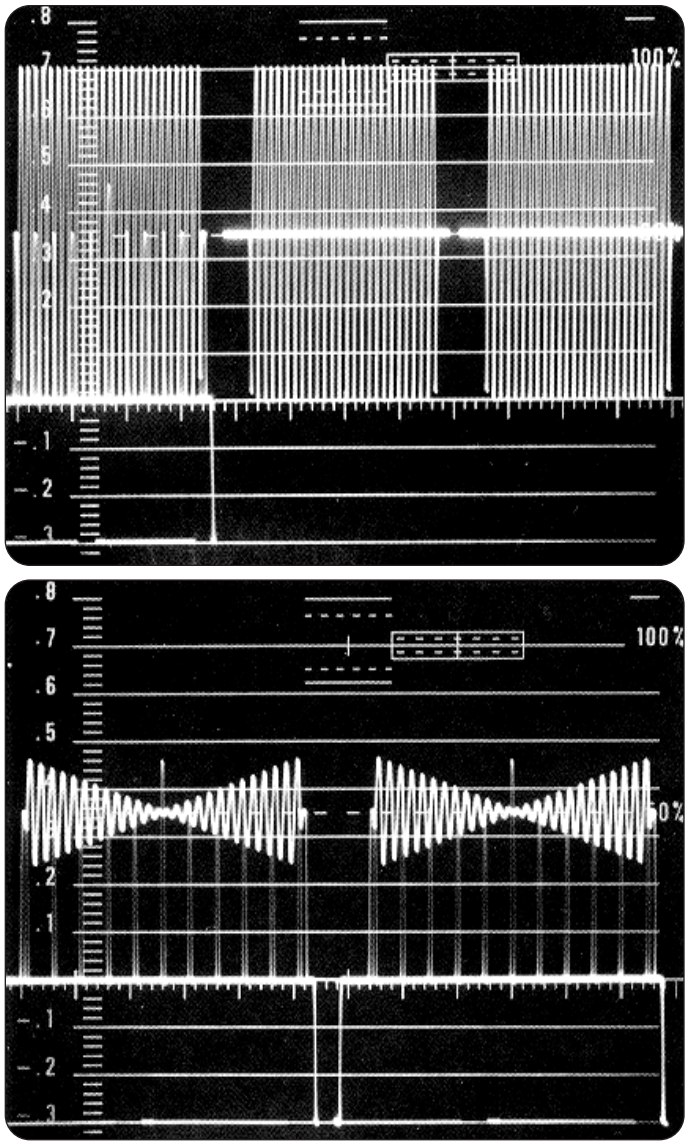
Boundary Representation Modeling – This modeling technique defines a world in terms of its edges. The primary components of a boundary rep world are vertices and polygons. PictureMaker is a boundary rep system.

Bounding Box – A relatively simple object, usually a rectangle or box with the overall dimensions, or bounds, of a more complex object. A bounding is used in place of that exact, more complex, modeled shape to represent it in an animation preview, or to predict the inclusion of that object in the scene. This reduces the calculation/production time and expense when

previewing computer animation sequences to check continuity, positions, and timing.

Bouquet – a) A group of transport streams in which programs are identified by a combination of network ID and PID (part of DVB-SI). **b)** A collection of services marketed as a single entity.

Bowtie Test Signal – Each of three component signals is fed to a different channel of the CAV system and used to evaluate the relative amplitudes and relative timing on some CAV waveform monitors. In standard definition the first signal is a 500 kHz sine wave packet, which is fed to video channel 1. The other two signals are identical 502 kHz. The three sine wave packets are generated to be precisely in phase at their centers. Because of their 2 kHz offset, the color difference channels become increasingly out of phase with the luminance channel on either side of center. If the three signals are properly timed, their sum results in the bowtie waveform.



Box – Electronic equipment used to process television signals in a consumers' home, usually housed in a "box" that sits atop a TV set or VCR.

Box House – A slang term for a mail-order business for audio and video components. Box houses frequently offer little or no consumer support or equipment repair.

BPF – See Bandpass Filter.

BPI – Bits per linear inch down a recorded track.

B-Picture (Bidirectionally Predictive-Coded Picture) – An MPEG picture that is coded using motion compensated prediction from past and/or future reference pictures. Motion vectors pointing forward and backwards are used, and they may point at either I-pictures or P-pictures. The B-pictures provide the highest compression, but demand knowledge of several pictures. Consequently, B-pictures give a higher delay and call for a larger picture memory. B-pictures are never used as a reference in a prediction. When B-pictures are part of a sequence, the pictures are not sent in chronological order owing to the fact that future P-pictures and/or I-pictures are needed (and therefore must be decoded) for the decoding of B-pictures. The P- and I-pictures have to be sent earlier than the actual point of time to which they relate.

BPS – Abbreviation for Bits Per Second.

BPSK (Binary Phase Shift Keying) – A modulation technique that has proven to be extremely effective for LowFER and MedFER operation, as well as for amateur HF work.

BR (Radiocommunication Bureau) – The Radiocommunication Bureau (BR), the executive arm of the Radiocommunication Sector, is headed by a Director who organizes and coordinates the work of the Radiocommunication Sector.

BRA (Basic Rate Access) – Two 64 kbps B channels + one 16 kbps D channel (2B + D), carrying user traffic and signaling information respectively to the user via twisted pair local loop.

Braid – A group of textile or metallic filaments interwoven to form a tubular structure that may be applied over one or more wires or flattened to form a strap.

Branch – See Jump.

Break Elongation – The relative elongation of a specimen of magnetic tape or base film at the instant of breaking when it has been stretched at a given rate.

Breakdown – A written accounting of the shooting schedule and production resources.

Break-Down – The separation of a roll of camera original negative into its individual scenes.

Breakpoint – a) A break in the smoothness of a curve. **b)** Software or hardware device that stops the program and saves the current machine status, under user-specified conditions.

Breakup – Disturbance in the picture or sound signal caused by loss of sync or by videotape damage.

Breathing – Amplitude variations similar to "bounce" but at a slow, regular rate.

Breezeway – The portion of the video signal which lies between the trailing edge of the horizontal sync pulse and start of burst. The Breezeway is part of the back porch. Also refer to the Horizontal Timing discussion.

Bridge – Bridges are devices that connect similar and dissimilar LANs at the Data Link Layer (OSI layer 2), regardless of the Physical Layer protocols or media being used. Bridges require that the networks have consistent addressing schemes and packet frame sizes. Current introductions have been termed learning bridges since they are capable of updating node address (tracking) tables as well as overseeing the transmission of data between two Ethernet LANs.

Brightness – a) Overall DC voltage level of the video signal. The brightness control is an adjustment of setup (black level, black reference). **b)** Attribute of a visual sensation according to which an area appears to emit more or less light. The subjective counterpart of objective luminance. **c)** The value of a pixel along the black-white axis. **d)** In NTSC and PAL video signals, the brightness information at any particular instant in a picture is conveyed by the corresponding instantaneous DC level of active video. Brightness control is an adjustment of setup (black level, black reference).

Brightness Signal – Same as the luminance signal (Y). This signal carries information about the amount of light at each point in the image.

Broad Pulses – Another name for the vertical synchronizing pulses in the center of the vertical interval. These pulses are long enough to be distinguished from all others and are the part of the signal actually detected by vertical sync separators.

Broadband – a) A response that is the same over a wide range of frequencies. **b)** capable of handling frequencies greater than those required for high-grade voice communications (higher than 3 to 4 kilohertz).

Broadcast – A one-to-many transmission of information that may be simultaneously received by many, but unknown, receivers.

Broadcast Communications System – A network such as a cable system capable of delivering multiple high capacity services simultaneously.

Broadcast Monitor – Television set without receiving circuitry, wired directly to a VTR or other output device.

Broadcast Quality – a) A nebulous term used to describe the output of a manufacturer's product no matter how bad it looks. **b)** A standard of 525 lines of video picture information at a rate of 60 Hz – NTSC in the USA; or 625 lines at a rate of 50 Hz – PAL in Europe (except France). **c)** A quality standard for composite video signals set by the NTSC and conforming to FCC rules. When recording video signals or videotape for broadcast, it is important to note that devices providing NTSC signals do not necessarily meet FCC broadcast standards.

Broadcast Television – Conventional terrestrial television broadcasting, the most technically constrained delivery mechanism for ATV, faced with federal regulations and such potential problems as multipath distortion and co-channel interference.

Broadcaster (Service Provider) – An organization which assembles a sequence of events or programs to be delivered to the viewer based upon a schedule.

B-Roll – a) Off the shelf video sequences for various needs. **b)** Refers to secondary or duplicated footage of a fill or secondary nature usually played from the B source player in an A/B roll linear editing system. B-roll does not refer to all tapes played from the B source player.

Brouter – Brouters are bridge/router hybrid devices that offer the best capabilities of both devices in one unit. Brouters are actually bridges capable of intelligent routing and therefore are used as generic components to integrate workgroup networks. The bridge function filters information that remains internal to the network and is capable of supporting multiple higher-level protocols at once. The router component maps out the optimal paths for the movement of data from one point on the network to another. Since the brouter can handle the functions of both bridges and routers, as well as bypass the need for the translation across application protocols with gateways, the device offers significant cost reductions in network development and integration.

Brown Stain – A non-magnetic substance that forms on that area of a magnetic head's surface over which tape passes. Its origin is not well understood but it is known to occur primarily in the presence of low humidity.

Browse – To scan a database or a list of files, either for a particular item or for anything that seems to be of interest. Browsing implies observing rather than changing information.

Browse Station – A viewing station that provides browsing of stored images or video. Browse stations are internal and connected via ethernet.

BRR – See Bit Rate Reduction.

Bruch Blanking – A 4-field burst blanking sequence employed in PAL signals to ensure that burst phase is the same at the end of each vertical interval.

BS – Bandwidth of the frequency slot allocated to a service.

BS.707 – This ITU recommendation specifies the stereo audio specifications (Zweiton and NICAM 728) for the PAL and SECAM video standards.

BS1, BS2, BS3 – DBV-RCT burst structures for data transmission.

BSI (British Standards Institution) – The British Standards Institution was the first national standards body in the world. There are now more than 100 similar organizations which belong to the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC).

BSLBF (Bit String, Left Bit First) – Bit string, left bit first, where "left" is the order in which bit strings are written in ISO/IEC 11172. Bit strings are written as a string of 1s and 0s within single quote marks, e.g. '1000 0001'. Blanks within a bit string are for ease of reading and have no other significance.

B-Spline – a) A type of smooth curve (or surface) bound to its control points. **b)** A smooth curve that passes on the inner side of the vertices of a polygon to connect the vertices to interpolate or draw the polygon. **c)** A curve used to define a motion path.

BSS (Broadcast Satellite Services) – Typically used to refer to a range of frequencies intended for direct reception of satellite television and entertainment services. These frequencies are subject to internationally-agreed upon regulations that govern their use and are designed to ensure that all countries are able to offer services of this nature.

BST-OFDM – See Bandwidth Segmented Orthogonal Frequency Division Multiplexing.

BT.1119 – Defines the widescreen signaling (WSS) information for NTSC and PAL video signals. For (B, D, G, H, I) PAL systems, WSS may be present on line 23, and on lines 22 and 285 for (M) NTSC.

BT.1124 – Defines the ghost cancellation reference (GCR) signal for NTSC and PAL.

BT.1197 – Defines the PALplus standard, allowing the transmission of 16:9 programs over normal PAL transmission systems.

BT.1302 – Defines the transmission of 16:9 BT.601 4:2: YCbCr digital video between pro-video equipment. It defines a parallel interface (8-bit or 10-bit, 36 MHz) and a serial interface (360 Mbps).

BT.1303 – Defines the transmission of 16:9 BT.601 4:4:4:4 YCbCr and RGBK digital video between pro-video equipment. Two parallel interfaces (8-bit or 10-bit, 36 MHz) or two serial interfaces (360 Mbps) are used.

BT.1304 – Specifies the checksum for error detection and status for pro-video digital interfaces.

BT.1305 – Specifies the digital audio format for ancillary data for pro-video digital interfaces. See also SMPTE 272M.

BT.1358 – 720 x 480 (59.94 Hz) and 720 x 576 (50 Hz) 4:2:2 YCbCr pro-video progressive standards. See also SMPTE 293M.

BT.1362 – Pro-video serial interface for the transmission of BT.1358 digital video between equipment. Two 270 Mbps serial interfaces are used.

BT.1364 – Specifies the ancillary data packet format for pro-video digital interfaces. See also SMPTE 291M.

BT.1365 – Specified the 24-bit digital audio format for pro-video HDTV serial interfaces. See also SMPTE 299M.

BT.1366 – Specifies the transmission of timecode as ancillary data for pro-video digital interfaces. See also SMPTE 266M.

BT.1381 – Specifies a serial digital interface-based (SDI) transport interface for compressed television signals in networked television production based on BT.656 and BT.1302.

BT.470 – Specifies the various NTSC, PAL and SECAM video standards used around the world. SMPTE 170M also specifies the (M) NTSC video standard used in the U.S.. BT.470 has replaced BT.624.

BT.601 – 720 x 480 (59.94 Hz), 960 x 480 (59.94 Hz), 720 x 576 (50 Hz) and 960 x 576 (50 Hz) 4:2:2 YCbCr pro-video interlaced standards.

BT.653 – Defines the various teletext standards used around the world. Systems A, B, C and D for both 525-line and 625-line TV systems are defined.

BT.656 – Defines a parallel interface (8-bit or 10-bit, 27 MHz) and a serial interface (270 Mbps) for the transmission of 4:3 BT.601 4:2:2 YCbCr digital video between pro-video equipment. See also SMPTE 125M.

BT.709 – This ITU recommendation specifies the 1920 x 1080 RGB and 4:2:2 YCbCr interlaces and progressive 16:9 digital video standards. Frame refresh rates of 60, 59.94, 50, 30, 29.97, 25, 24 and 23.976 Hz are supported.

BT.799 – Defines the transmission of 4:3 BT.601 4:4:4:4 YCbCr and RGBK digital video between pro-video equipment. Two parallel interfaces (8-bit or 10-bit, 27 MHz) or two serial interfaces (270 Mbps) are used.

BTA – Japan's Broadcast Technology Association. A national standards-making organization comprising manufacturers and broadcasters, not unlike SMPTE. A proponent of an ATV system.

BTS (Broadcast Television Systems) – A joint venture of Bosch Fernseh and Philips established to sell television production equipment. BTS offers the first multi-standard HDTV camera.

BTSC – This EIA TVSB5 standard defines a technique of implementing stereo audio for NTSC video. One FM subcarrier transmits a L+R signal, and an AM subcarrier transmits a L-R signal.

Buckling – Deformation of the circular form of a tape pack which may be caused by a combination of improper winding tension, adverse storage conditions and/or poor reel hub configuration.

Buffer – a) An IC that is used to restore the logic drive level. **b)** A circuit or component that isolates one electrical circuit from another. **c)** A digital storage device used to compensate for a difference in the rate of flow of information or the time of occurrence of events when transmitting information from one device to another. **d)** In telecommunications, a protective material used in cabling optical fiber to cover and protect the fiber. The buffer material has no optical function.

Buffer Control – The feedback algorithms used by the encoder to avoid overflow of the video rate buffer. The video rate buffer is a FIFO which holds the coded video prior to output into the channel.

Buffer Model – A model that defines how a terminal complying with this specification manages the buffer resources that are needed to decode a session.

Bug – An error in a computer program. Eliminating errors is known as debugging.

Built-In Reference Tones – Refers to adjustment tones which are available within the recorder for adjusting record level and bias.

Bulk Eraser – A device used to erase an entire tape at one time. Bulk erasers are usually more effective than recorders' erase heads.

Bump Up – Copying from one recording medium onto another that is more suitable for post-production purposes because, for example, it offers better bandwidth or timecode capabilities.

Bumping Up – Transferring a program recorded on a lower quality videotape to a higher quality videotape (e.g., from Hi-8 to Betacam). Bumping up to a higher format allows footage to be preserved on a more stable tape format and makes it possible to edit in a higher-end editing environment.

Burn – An image or pattern appearing so regularly on the screen of a picture tube that it ages the phosphors and remains as a ghost image even when other images are supposed to be shown. On computer terminals, the areas occupied by characters are frequently burned, particularly in the upper left corner. In television transmission centers, color bars are sometimes burned onto monitors. There is some concern that some ATV schemes will burn a widescreen pattern on ordinary TV sets due to increased vertical blanking or will burn a non-widescreen pattern on ATV sets due to reception of non-ATV signals. In production, refers to long-term or permanent image retention of camera pickup tubes when subjected to excessive highlights.

Burned-In Image – An image which persists in a fixed position in the output signal of a camera tube after the camera has been turned to a different scene.

Burned-In Time Code (BITC) – Time code numbers that are superimposed on the picture. This is time code that is displayed on the monitor along with the video it pertains to. BITC can either be Vertical Interval Time Code (VITC) or Longitudinal Time Code (LTC).

Burn-In – a) Component testing method used to screen out early failures by running the circuit for a specified length of time. **b)** A visible time code permanently superimposed on footage, usually in the form of white numbers in a black rectangle.

Burn-In Dub – A duplicate of an original or master tape that includes the time code reference on-screen and is used as a reference for logging and locating scenes.

Burst – A small reference packet of the subcarrier sine wave, typically 8 or 9 cycles, which is sent on every line of video. Since the carrier is suppressed, this phase and frequency reference is required for synchronous demodulation of the color information in the receiver. Refer to the Horizontal Timing discussion.

Burst Gate – This signal tells the receiver valid color ready for use.

Bus – a) Any row of video crosspoints that allow selection of various sources to be selected, and the associated row of buttons for such selection. Buses are usually associated with a given M/E or the DSK although they may be independent as in aux buses. Also, any row of video or key source selections which may or may not be selected by push buttons on a bus row. For example, key video selections on Ampex switchers appear on buses which are accessed and selected by keypads. Due to the fact that there is no associated row of buttons, this arrangement is called a "phantom bus". **b)** A parallel data path in a computer. **c)** In computer architecture, a path over which information travels internally among various components of a system and is available to each of the components.

Bus Address – A code number sent out to activate a particular device on a shared serial or parallel bus interface. Also the identification number of a device.

Bus Conflict – Conflict that occurs when two or more device outputs of opposite logic states are placed on a three-state bus at the same time.

Bus Controller – Generates bus commands and control signals.

Bus Driver – An IC that is added to a bus to provide sufficient drive between the CPU and the other devices that are tied to the bus. These are necessary because of capacitive loading, which slows down the data rate and prevents proper time sequencing of microprocessor operation and/or to overcome resistive loading when fan out requirements increase.

Bus Keyer – A keyer that does a key on top of the bus video before the signal gets to the M/E. On the 4100, these are packaged as "dual bus keyers" and are the modules between the bus rows and the M/Es. On the AVC, bus keyers are integral with the M/E module, with controls in a similar location.

Bus Row – Any row of video source select buttons allowing immediate selection of switcher video sources.

Bus Termination – Method of preventing reflections at the end of a bus. Necessary only in high-speed systems.

Business Television – One-way television broadcasts (usually by satellite) by corporations to multiple sites. The return path for interactivity is typically audio only.

Buss – In video switching equipment, a wire carrying line level signals (anything greater than mike level).

Button – a) On a mouse, a button is a switch that you press with a finger. **b)** In a window on your screen, a button is a labeled rectangle that you click using the cursor and mouse. **c)** This is a rectangular area in the Subpicture display area highlighted by the Highlight Information (HLI) that is used to define the active area on a menu associated with a specific action.

Button Menu – These are consecutive numbers assigned to each button on a menu, ranging from "1" to "36".

BVB (Black-Video-Black) – A preview mode that displays black, newly inserted video, and then black again.

B-vop (Bidirectionally Predictive-Coded Video Object Plane) – A vop that is coded using motion compensated prediction from past and/or future reference vops.

BW – See Bandwidth.

BWF (Broadcast WAV Format) – Broadcast WAV Format is an audio file format based on Microsoft's WAV Format that carries PCM or MPEG encoded audio. BWF adds the metadata, such as a description, originator, date and coding history, needed for interchange between broadcasters.

B-Y – One of the color difference signals used in the NTSC system, obtained by subtracting luminance from the blue camera signal. This is the signal that drives the horizontal axis of a vectorscope. The human visual system has much less acuity for spatial variation of color than for brightness. Rather than conveying RGB, it is advantageous to convey luma in one channel, and color information that has had luma removed in the two other channels. In an analog system, the two color channels can have less bandwidth, typically one-third that of luma. In a digital system each of the two color channels can have considerably less data rate (or data capacity) than luma. Green dominates the luma channel: about 59% of the luma signal comprises green information. Therefore it is sensible, and advantageous for signal-to-noise reasons, to base the two color channels on blue and red. The simplest way to remove luma from each of these is to subtract it to form the difference between a primary color and luma.

Hence, the basic video color-difference pair is (B-Y), (R-Y) [pronounced “B minus Y, R minus Y”]. The (B-Y) signal reaches its extreme values at blue (R=0, G=0, B=1; Y=0.114; B-Y=+0.886) and at yellow (R=1, G=1, B=0; Y=0.886; B-Y=-0.886). Similarly, the extreme of (R-Y), +-0.701, occur at red and cyan. These are inconvenient values for both digital and analog systems. The color spaces YPbPr, YCbCr, Photo YCC and YUV are simply scaled versions of (Y, B-Y, R-Y) that place the extreme of the color difference channels at more convenient values.

Byte – a) A complete set of quantized levels containing all of the bits. Bytes consisting of 8 to 10 bits per sample are typical. **b)** Group of eight bits. Can be used to represent a character. Microcomputer instructions require one, two, or three bytes. A word can be one or more bytes. **c)** A group of adjacent binary digits operated upon as a unit, capable of holding one character in the local character set, and usually shorter than a computer word (frequently connotes a group of eight bits). Current usage within the context of electronic production concerns is tending to define a byte as eight bits to have a consistent data unit for measuring memory capacities, etc. **d)** 8 bits. The combination of 8 bits into 1 byte allows each byte to represent 256 possible values. See Megabyte, Gigabyte, Terabyte.

1 byte = 8 bits = 256 discrete values (brightness, color, etc.)
1 kilobyte = 1,024 bytes (not 1000 bytes)
1 megabyte = 1,048,576 bytes (not one million bytes)
1 gigabyte = 1, 073,741,824 bytes (not one billion bytes)
1 terabyte = 1,099,511,627,776 bytes (not one trillion bytes)

Byte Aligned – a) A bit in a coded bit stream is byte-aligned if its position is a multiple of 8-bits from the first bit in the stream. **b)** Data in a coded bit stream that is positioned a multiple of 8-bits from the first bit in the stream. For example, MPEG video and system streams are byte-aligned.

▶ C

C/N – Ratio of RF or IF signal power to noise power.

CA (Conditional Access) – Information describing, or indicating whether the program is scrambled.

Cable Equalization – The process of altering the frequency response of a video amplifier to compensate for high-frequency losses in coaxial cable.

Cable Network – Group of radio or television outlets linked by cable or microwave that transmit identical programs simultaneously, or the company that produces programs for them. Cable networks include companies such as: The Discovery Channel, ESPN, C-SPAN. National broadcast commercial television networks in the U.S. include ABC, NBC, CBS.

Cable Television – System that transmits original programming and programming of broadcast television stations, to consumers over a wired network.

Cable Virtual Channel Table (CVCT) – An ATSC table that identifies a set of one or more channels within a cable network. The table includes major and minor channel numbers, carrier frequency, short channel name, and information for navigation and tuning.

Cablecasting – To originate programming over a cable system. Includes public access programming.

CAD (Computer-Aided Design) – This usually refers to a design of system that uses computer specialized software.

Calibrate – To fine-tune video levels for maximum clarity during digitizing (from videotape).

Calibrated Delay Fixture – This fixture is another way of measuring Chrominance to Luminance delay. The fixture allows the delay to be incrementally adjusted until there is only one peak in the baseline indicating all the delay errors have been dialed out. The delay value can be read from the fixture while the gain can be calculated from the remaining peaks.

Call – Jump to a subroutine. A jump to a specified address is performed, but the contents of the program counter are saved (usually in the stack) so that the calling program flow can resume when the subroutine is finished.

Camcorder – The combination of camera and video tape recorder in one device. Camcorders permit easy and rapid photography and recording simultaneously. Camcorders are available in most home video formats: 8 mm, Hi-8, VHS, VHS-C, S-VHS, etc.

Camera Analysis – The measurement and evaluation of the spectral sensitivities of the three color channels of a television camera. The camera and matrixing are identified and measured.

Camera Analysis, Ideal – For optimum image quality, both objective and perceived, the spectral sensitivities of the three color channels of a television camera should be matched to the primary colors of the R, G, B color space. Note: Some practice still exists matching the color channels of the camera to the display phosphors. This reduces the color gamut and carries unnecessary noise penalties. The practice is deprecated.

Camera Chain – Television camera and associated equipment, consisting of power supply and sync generator.

Camera Control Unit (CCU) – Remote control device for video cameras usually placed in the editing suite. Controls usually include video levels, color balancing and iris control.

Camera Log – A record sheet giving details of the scene photographed on a roll of original negative.

Camera Match – Shot-to-shot picture fidelity. Improperly matched cameras may exhibit differences in level, balance, colorimetry, or defects that will cause the picture quality to change from shot to shot. These differences may present problems during editing, as the editor attempts to minimize differences.

Camera Supply – Most video cameras use an external DC voltage supply which is derived either from a battery belt worn by the camera operator, from a battery within the video recorder itself, or from the mains power supply (after voltage conversion).

Camera Tube – See Pickup Tube.

Candela (cd) – A unit for measuring luminous intensity. One candela is approximately equal to the amount of light energy generated by an ordinary candle. Since 1948 a more precise definition of a candela has become: “the luminous intensity of a black body heated up to a temperature at which platinum converges from a liquid state to a solid”.

Candlepower – The unit measure of incident light.

Canned – In the can, old movie term still used occasionally to mean finished.

Capstan – The driven spindle or shaft in a tape recorder, sometimes the motor shaft itself, which rotates against the tape (which is backed up by a rubber pressure or pinchroller), pulling it through the machine at constant speed during recording and playback modes of operation.

Capstan Crease – Wrinkles or creases pressed into the tape by the capstan//pinchroller assembly.

Capstan Idler – A rubber wheel which presses the magnetic tape against the capstan so that the capstan can move the tape.

Capstan Servo – The regulating device of the capstan as it passes tape through a videotape recorder.

Caption – See Title.

Capture – The process of digitizing the analog video signal. See Digitize.

Capture Card – Sometimes called a capture or video board, the logic card installed into a computer and used to digitize video. Or, for video that is already digitized, the device that simply transfers the file to the hard disk. Using a hardware or software codec, the capture card also compresses video in and decompresses video out for display on a television monitor.

Capture Mask Effect – An effect that converts the format of source data during playback. For example, it could convert video frame data between PAL (25 FPS) and NTSC (29.97 fps) formats.

Card Guides – Narrow metal or plastic tracks at the top and bottom of the chassis into which you slide printed circuit boards.

Cardioid – The quasi-heart-shaped sensitivity pattern of most unidirectional microphones. Hypercardioid and supercardioid microphones have basically similar patterns, but with longer, narrower areas of sensitivity at the front, and slightly increased rear sensitivity.

Carriage – A cable system's procedure of carrying the signals of television stations on its various channels. FCC rules determine which signals cable systems must or may carry.

Carrier – A signal which is modulated with data to be transmitted.

Carry Flag – Flag bit in the microprocessor's status register, which is used to indicate the overflow of an operation by the arithmetic logic unit.

Cartridge – A plastic container that holds tape for easy loading into a matching recorder or player.

CAS – See Conditional Access System.

Cassette – A tape cartridge in which the tape passes from one hub to another.

Casting – The ability to distribute live video (or audio) broadcasts over local or wide area networks that may optionally be received by many viewers.

CAT (Conditional Access Table) – Provides information on the conditional access systems used, packets having PID codes of 1 and information about the scrambling system. See ECM and EMM.

Cathode-Ray Tube (CRT) – a) An electron tube assembly containing an electron gun arranged to direct a beam upon a fluorescent screen. Scanning by the beam can produce light at all points in the scanned raster. **b)** Display device, or picture tube, for video information.

CATV (Community Access Television) – Acronym for cable TV, derived from the older term, community antenna television. Also can stand for Community Access Television.

CATV Penetration – The ratio of the number of subscribers to the total number of households passed by the cable system.

CAV (Component Analog Video) – Analog video signal format in which the picture information is conveyed in three signals. CAV formats include: RGB; Y, R-Y, B-Y; Y, I, Q; Y, U, V; Y, Pb, Pr. Refer to the definition for Analog Components.

CB – Scaled version of the B-Y signal.

C-Band – The group of microwave frequencies from 4 to 6 GHz. C-band satellites use a band of satellite downlink frequencies between 3.7 and 4.2 GHz. C-band is also used by terrestrial, line-of-sight microwave links.

CBC – See Canadian Broadcasting Corporation.

CBPS (Coded Bits Per Symbol)

CBR – See Constant Bit Rate.

CC – See Closed Captioning.

CCD – See Charge Coupled Device.

CCD Aperture – The proportion of the total area of a CCD chip that is photosensitive.

CCETT (Centre Commun d'Etudes de Telecommunications et de Telediffusion, France) – The CCETT is one of the three licensors of the MPEG Layer II coding algorithm. The audio coding technique, originally developed for DAB under EUREKA 147 jointly with IRT and Philips, was selected by ISO/MPEG as Layer II of the MPEG-1 standard.

CCI (Copy Control Information) – Information specifying if content is allowed to be copied.

CCIR (Comite Consultatif Internationale des Radiocommunications) – International Radio Consultative Committee, an international standards committee that has been absorbed by the parent body, the ITU. A permanent organization within the ITU with the duty to study technical and operating questions relating specifically to radio communications and to make recommendations on them. The CCIR does not prepare regulations; it draws up recommendations and reports, produced by experts from both public and private entities, which provide guidance on the best operational methods and techniques. The CCIR is expected to base its recommendations upon 150 and IEC international standards, but when no relevant one exists, the CCIR has been known to initiate standardization. These recommendations and reports provide a basis for international standardization of telecommunications.

CCIR-468 – Specifies the standard for weighted and unweighted noise measurements. The weighted standard specifies the weighting filter and quasi-peak detector. The unweighted standard specifies a 22 Hz to 22 kHz bandwidth limiting filter and RMS detector.

CCIR-500 – Method for the Subjective Assessment of the Quality of Television Pictures. CCIR-500 is a detailed review of the recommendations for conducting subjective analysis of image quality. The problems of defining perceived image quality are reviewed, and the evaluation procedures for interval scaling, ordinal scaling, and ratio scaling are described – along with the applications for which each is best employed.

CCIR-601 – See ITU-R BT.601.

CCIR-656 – The physical parallel and serial interconnect scheme for ITU-R BT.601-2-601. CCIR 656 defines the parallel connector pinouts as well as the blanking, sync, and multiplexing schemes used in both parallel and serial interfaces. Reflects definitions in EBU Tech 3267 (for 625 line signals) and in SMPTE 125M (parallel 525) and SMPTE 259M (serial 525).

CCIR-6601 – Consultative Committee International Radio. A standard that corresponds to the 4:2:2 format.

CCIR-709 – The recommendation considers that the HDTV studio standard must be harmonized with those of current and developing television systems and with those of existing motion-picture film. In a review of current systems, a consensus was identified in specifications for opto/electronic conversion, picture characteristics, picture scanning characteristics, and signal format (both analog and digital representations). Work is underway in the editing of national and CCIR related documents to determine whether these consensus values may be affirmed in the next review of the individual documents. The values in Rec 709 are considered interim, and CCIR notes that continuing work is expected to define target parameters for future improved image rendition.

CCIR-801 – At present, the first results on studies related to Study Programme 18U/11 have been collected. It must be recognized that these studies must be intensified in close cooperation with such organizations as the IEC and ISO to take fully into account the requirements for implementation of HDTV for media other than broadcasting, i.e., cinema, printing, medical applications, scientific work, and video conferencing. In addition, the transmission of HDTV signals via new digital transmission channels or networks has to be considered and taken into account.

CCITT (Comite Consultatif Internationale Telegraphique et Telephonique) – A committee of the International Telecommunications Union responsible for making technical recommendations about telephone and data communication systems for PTTs and suppliers. Plenary sessions are held every four years to adopt new standards. Now part of ITU-TSS.

CCITT 0.33 – Recommendation 0.33 of the CCITT Specification for Measuring Equipment, Volume IV, Series 0 Recommendations-1988. This defines the automatic test sequences that are used to check on the different parameters that are important to signal quality. Recommendation 0.33 has defined sequences for both monaural and stereo audio testing. Also called EBU Recommendation R27.

CCK – See Composite Chroma Key.

CCTV – See Closed Circuit TV.

CCTV Camera – A unit containing an imaging device that produces a video signal in the basic bandwidth.

CCTV Installation – A CCTV system, or an associated group of systems, together with all necessary hardware, auxiliary lighting, etc., located at the protected site.

CCTV System – An arrangement comprised of a camera and lens with all ancillary equipment required for the surveillance of a specific protected area.

CCU – See Camera Control Unit.

CCVE (Closed Circuit Video Equipment) – An alternative acronym for CCTV.

CD (Committee Draft) – This is the first public form of a proposed international standard.

CD (Compact Disc) – a) A 4.75" disc used to store optical, machine-readable, digital data that can be accessed with a laser-based reader such as a CD player. **b)** A standard medium for storing digital data in machine-readable form, accessible with a laser-based reader. Readers are typically referred to as CD-ROM drives.

CD+G (Compact Disc Plus Graphics) – A variation of CD which embeds graphical data in with the audio data, allowing video pictures to be displayed periodically as music is played. Primarily used for karaoke.

CD-DA (Compact Disc-Digital Audio) – Standard music CDs. CD-DA became CD-ROMs when people realized that you could store 650 Mb of computer data on a 12cm optical disc. CD-ROM drives are simply another kind of digital storage media for computers, albeit read-only. They are peripherals just like hard disks and floppy drives. (Incidentally, the convention is that when referring to magnetic media, it is spelled disk. Optical media like CDs, laserdisc, and all the other formats are spelled disc.)

CDDI (Copper Data Distributed Interface) – A high speed data interface, like FDDI but using copper. See FDDI.

CD-I – See Compact Disc Interactive.

CD-ROM – See Compact Disc Read Only Memory.

CDS (Correlated Double Sampling) – A technique used in the design of some CCD cameras that reduces the video signal noise generated by the chip.

CDT (Carrier Definition Table)

CDTV – See Conventional Definition Television.

CD-XA – CD-XA is a CD-ROM extension being designed to support digital audio and still images. Announced in August 1988 by Microsoft, Philips, and Sony, the CD-ROM XA (for Extended Architecture) format incorporates audio from the CD-I format. It is consistent with ISO 9660, (the volume and the structure of CD-ROM), is an application extension. CD-XA defines another way of formatting sectors on a CD-ROM, including headers in the sectors that describe the type (audio, video, data) and some additional info (markers, resolution in case of a video or audio sector, file numbers, etc.). The data written on a CD-XA can still be in ISO9660 file system format and therefore be readable by MSCDEX and UNIX CD-ROM file system translators. A CD-I player can also read CD-XA discs even if its file system only resembles ISO9660 and isn't fully compatible. However, when a disc is inserted in a CD-I player, the player tries to load an executable application from the CD-XA, normally some 68000 application in the /CDI directory. Its name is stored in the disc's primary volume descriptor. CD-XA bridge discs, like Kodak's Photo CDs, do have such an application, ordinary CD-XA discs don't. A CD-DA drive is a CD-ROM drive but with some of the compressed audio capabilities found in a CD-I player (called ADPCM). This allows interleaving of audio and other data so that an XA drive can play audio and display pictures (or other things) simultaneously. There is special hardware in an XA drive controller to handle the audio playback. This format came from a desire to inject some of the features of CD-I back into the professional market.

CED (Capacitance Electronic Disk) – Technology used by RCA in their Videodisk product.

Cel – Refers to a transparent sheet of glass or acetate on which a "layer" or "level" of artwork is painted. Since the sheet is clear where there is no artwork, several sheets can be superimposed, allowing "automatic hidden-surface removal", or simply, the "painter's algorithm".

Celanar – Trade name for polyester produced by Celanese.

Cell – In DVD-Video, a unit of video anywhere from a fraction of a second to hours long. Cells allow the video to be grouped for sharing content among titles, interleaving for multiple angles, and so on.

Cell Animation – Also called Onion Skinning, an animation technique in which a background painting is held in place while a series of transparent sheets of celluloid containing objects are placed over the background painting, producing the illusion of movement. One of the two main types of animation associated with digital video. Compare with Frame-Based 2D Animation.

Cell Command – A navigation command executed when the presentation of a cell has been completed.

Cell Compression – Cell is a compression technique developed by Sun Microsystems. The compression algorithms, the bit stream definition, and the decompression algorithms are open; that is, Sun will tell anybody who is interested about them. Cell compression is similar to MPEG and H.261 in that there is a lot of room for value-add on the compressor end. Getting the highest quality image from a given bit count at a reasonable amount of computation is an art. In addition the bit-stream completely defines the compression format and defines what the decoder must do and there is less art in the decoder. There are two flavors of Cell: the original called Cell or CellA, and a newer flavor called CellB.

Cell Loss Priority (CLP) – A flag in the ATM cell header which indicates the priority (normal or low) of the payload.

Cell Loss Ratio (CLR) – A QoS specification in an ATM network. It measures the number of cells that can be lost to the network relative to the total number of cells transmitted.

Cell Side – The base (celluloid) surface of a strip of film.

CellB – A video coding scheme based on quadtree decomposition of each image.

CELP – See Code-Excited Linear Prediction.

CEN (Comite Europeen de Normalisation) – European committee for standardization.

CENELEC (Comite Europeen de Normalisation Electrotechnique) – European committee for electrotechnical standardization.

Center Channel – The central component of a front stereo audio presentation channel.

Central Processing Unit – Computer module in charge of fetching, decoding, and executing instructions. It incorporates a control unit, an ALU, and related facilities (registers, clocks, drivers).

Centralized Network – A network where a central server controls services and information; the server is maintained by one or more individuals called network administrators. On a centralized network that uses NIS, this server is called the NIS master, and all other systems on the network are called NIS clients. See also Network Administrator, NIS, NIS Client, NIS Domain, and NIS Master.

Ceramic Microphone – See Piezoelectric Microphone.

Certified Tape – Tape that is electrically tested on a specified number of tracks and is certified by the supplier to have less than a certain total number of permanent errors.

Certifier – Equipment that evaluates the ability of magnetic tape to record and reproduce. The equipment normally counts and charts each error on the tape, including level and duration of dropouts. In the Certify Mode, it stops on error to allow for visually inspecting the tape to see if the error cause is correctable or permanent.

CES – Consumer Electronics Show – A semi-annual event sponsored by the Consumer Electronics Group of EIA, at which IDTV and HDTV schemes have been demonstrated.

CFA (Color Filter Array) – A set of optical pixel filters used in single-chip color CCD cameras to produce the color components of a video signal.

CG – See Character Generator.

CGA (Color Graphics Adapter) – A low-resolution video display standard, invented for the first IBM PC. CGA pixel resolution is 320 x 200.

CGI – Abbreviation for Computer Graphic Imagery.

CGM (Computer Graphics Metafile) – A standard format that allows for the interchanging of graphics images.

CGMS (Copy Guard Management System) – For NTSC systems, a method of preventing copies or controlling the number of sequential copies allowed. CGMS is transmitted on line 20 for odd fields and line 283 for even fields for NTSC. For digital formats it is added to the digital signal conforming to IEEE 1394.

CGMS-A (Copy Generation Management System – Analog) – See EIA-608.

Challenge Key – Data used in the authentication key exchange process between a DVD-ROM drive and a host computer, where one side determines if the other side contains the necessary authorized keys and algorithms for passing encrypted (scrambled) data.

Change List – A list of instructions produced by the film composer that is used to track and compare the differences between two versions of a digital sequence. A change list is used to update a work print cutting with specified new edits and revisions.

Change-Over – a) In projection, the act of changing from one projector to another, preferably without interrupting the continuity of projection. **b)** The points in the picture at which such a change is made.

Changing Pixel – In shape coding, first pixel with color change from the previous pixel (opaque to transparent or vice versa).

Channel – a) An independent signal path. Stereo recorders have two such channels. Quadraphonic ones have four. **b)** A digital medium that stores or transports a digital television stream. **c)** A term mainly used to describe the configuration of audio tracks. For Dolby Digital there are 6 channels (left, center, right, left rear, right rear and low frequency effects). For linear PCM and MPEG audio, there are 8 channels. All DVD players are required to have a two-channel downmix output, which is a stereo version produced from the intrinsic channels on the disc if there are more than two channels on the disc.

Channel Bit – The bits stored on the disc, after being modulated.

Channel Capacity – The maximum number of 6 MHz channels which can be simultaneously carried on a CATV system.

Channel Code – A modulation technique that converts raw data into a signal that can be recorded or transmitted by radio or cable.

Channel Coding – a) Describes the way in which the 1s and 0s of the data stream are represented on the transmission path. **b)** Refers to any processing to use a particular communication channel or medium. Examples are forward error correction coding and prioritization of different parts of the coded video bit stream.

Channel Data – The bits physically recorded on an optical disc after error-correction encoding and modulation. Because of the extra information and processing, channel data is larger than the user data contained within it.

Channel Editor – The tool used to set keyframes and modify animation curves of the channels.

Channel Hierarchy – A set of animation parameters arranged and displayed in a logical group. A group, or upper-level, channel is called a folder. For example, the camera folder contains channels for camera settings such as position, interest and focal length.

Channel Stuffing – Techniques for adding information to an NTSC channel without increasing its bandwidth or eliminating its receiver-compatibility.

Channel-Compatible – An ATV transmission scheme that will fit within the confines of a standard, 6 MHz NTSC transmission channel. A higher level of channel-compatibility demands NTSC-like AM-VSB transmission so that the ATV channel will not cause any interference to other channels that would not otherwise be caused by an NTSC channel. Channel-compatible ATV schemes need not necessarily also be receiver-compatible.

Chaoji VideoCD – Another name for Super VideoCD.

CHAP (Challenge Handshake Authentication Protocol) – Network logon authentication. Three-way handshaking occurs. A link is established. The server agent sends a message to the machine originating the link. This machine then computes a hash function from the challenge and sends it to the server. The server determines if this is the expected response and, if so, authenticates the connection. The authentication procedure can take place once or multiple times during a session and each time it takes place the challenge can change.

Chapter – A chapter in a video disc is a section divider. Chapters are subsets of the video disc. In the DVD format, a chapter is a division of a title.

Chapter Stop – Programming that allows a viewer to jump immediately to a particular part of a title. A book with chapters is the common metaphor for a DVD.

Character Generator (CG) – a) A computer used to electronically generate text and sometimes graphics for video titles or captions which can be superimposed over a video signal. Text is usually entered via a keyboard, allowing selection of various fonts, sizes, colors, styles and background colors, then stored as multiple pages for retrieval. **b)** An electronic device that generates video letters for use as captions in television productions. The output of the character generator is often used as an external key input to the switcher. **c)** Circuit that forms the letters or numbers on a display or printer.

Characteristic – An aspect or parameter of a particular television system that is different from another system's, but not necessarily a defect. Characteristics include aspect ratio, colorimetry, resolution, and sound bandwidth.

Charge Coupled Device (CCD) – a) A semiconductor device that converts optical images to electronic signals. CCDs are the most commonly found type of image sensor in consumer camcorders and video cameras. **b)** Serial storage technology that uses MOS capacitors. **c)** A solid-state image sensor that converts light energy to electricity.

Chassis – The housing for removable disk modules. The chassis contains a power supply, drives and connectors for each module.

C-HDTV (Cable HDTV) – A seemingly impossible concept calling for channel-compatible ATV transmission of 850 lines of both static and dynamic horizontal and vertical resolution, among other characteristics. Its feasibility is being studied at ATRP.

Check Box – Used to select from a list of related items. An "x" marks the selected options in the corresponding box. (Select as many items as desired – one, none, or all.)

Checkerboard – Automatic assembly process where all edits from mounted reels are made, and edits for unmounted reels are skipped. Example: Reels 5, 29 and 44 are mounted on VTRs. The editing system looks at the list and assembles all edits that have reel numbers 5, 29 and 44 assigned to them, inserting these events at the exact spot on the master tape where they belong.

Checkerboard Cutting – A method of assembling alternate scenes of negative in A and B rolls allowing prints to be made without visible splices.

Checksum – a) An error-detecting scheme which is the sum of the data values transmitted. The receiver computes the sum of the received data values and compares it to the transmitted sum. If they are equal, the transmission was error-free. **b)** Method used to verify the integrity of data loaded into the computer. **c)** A simple check value of a block of data, calculated by adding all the bytes in a block. It is easily fooled by typical errors in data transmission systems; so that for most applications, a more sophisticated system such as CRC is preferred.

Chip – a) Common name for all ICs. **b)** An integrated circuit in which all the components are micro-fabricated on a tiny piece of silicon or similar material.

Chip Chart – A black and white test chart. It contains "chips" in varying intensities, that make up a gray scale. It is used to check the gray scale taking characteristics of a camera, including the parameter of gamma.

Chip Enable (CE) – See Chip Select.

Chip Select (CS) – Usually enables three-state drivers on the chip's output lines. Most LSI chips have one or more chip selects. The CS line is used to select one chip among many.

Choose – Choose means make a choice to select an action that will take place, i.e., press the left mouse button to bring up a pop-up menu, move the cursor to highlight the command that you want to run, then release the button.

Chroma – a) The depth or saturation of color. The saturation control adjusts the amplitude of color of the switcher's matte and background outputs. **b)** The (M) NTSC or (B, D, G, H, I) PAL video signal contains two pieces that make up what you see on the screen: the black and white (luma) part, and the color part. Chroma is the color part. Chroma can be further broken down into two properties of color: hue and saturation. Chroma can also be describe as a matrix, block or single pel representing one of the two color difference signals related to the primary colors in the manner defined in the bit stream. The symbols used for the color difference signals are Cr and Cb.

Chroma Bandpass – In an (M) NTSC or (B, D, G, H, I) PAL video signal, the luma (black and white) and the chroma (color) information are combined together. To decode an NTSC or PAL video signal, the luma and chroma must be separated. The chroma bandpass filter removes the luma from the video signal, leaving the chroma relatively intact. This works fairly well except in certain images where the luma information and chroma information overlap, meaning chroma and luminance information occupy the same frequency space. Depending on the filtering technique used, it can be difficult for the filter to separate the chroma from the luminance information. This results in some luminance information being interpreted as chroma and some chroma information being interpreted as luminance. The effects of this improper separation of luminance and chroma are especially noticeable when the television scene contains objects with thin, closely spaced black and white lines. As the camera moves across this object, there will be a rainbow of colors appear in the object indicating the improper separation of the luminance and chroma information.

Chroma Burst – See Color Burst.

Chroma Comp – This is a deliberate distortion of colors usually used to achieve unusual matching. By detecting the quadrant the color is in (By normally deciding whether R-Y and B-Y are positive or negative), the amplitude of R-Y, B-Y just for colors in that quadrant can be changed; hence, the hue and saturation can be changed for those colors without affecting others.

Chroma Corrector – A device used to correct problems related to the chroma of the video signal, as well as color balance and color noise.

Chroma Crawl – An NTSC artifact also sometimes referred to as moving dots, a crawling of the edges of saturated colors in an NTSC picture. Chroma Crawl is a form of cross-luminance, a result of a television set decoding color information as high-detail luminance information (dots). Most ATV schemes seek to eliminate or reduce chroma crawl, possibly because it is so immediately apparent.

Chroma Demodulation – The process of removing the color video information from a composite video signal where chrominance information is modulated on a color subcarrier. The phase reference of the subcarrier, is color burst which is a phase coherent sample of the color subcarrier.

Chroma Demodulator – Refer to the NTSC Composite Receiver Model at the end of this glossary when studying this definition. After the (M) NTSC or (B, D, G, H, I) PAL video signal makes its way through the Y/C separator, by either the chroma bandpass, chroma trap, or comb filter method, the colors are then decoded by the chroma demodulator. Using the recovered color subcarrier, the chroma demodulators take the chroma output of the Y/C separator and recovers two color difference signals (typically I and Q or U and V).

Chroma Flutter – A rapid coherent variation in the chroma saturation.

Chroma Format – Defines the number of chrominance blocks in a macroblock.

Chroma Gain – In video, the gain of an amplifier as it pertains to the intensity of colors in the active picture.

Chroma Key (CK) – a) A method of combining two video images. The most common example of chroma keying is the news weather person standing in front of a weather map. The details of the process are, a camera is pointed at the weather person who is standing in front of a bright blue or green background. The weather person and bright-blue or green background image is fed along with the image of the weather map into a computing device. Wherever the computing device sees the bright-blue or green background, it displays the weather map. Wherever the computing device does not see bright blue or green, it shows the weather person. **b)** A process for controlling the overlay of one video image over another, the areas of overlay being defined by a specific color or chrominance in one of the images. More versatility is available when working in the digital mode than in the analog since the color to define the effective mask can be more precisely specified. Effective use of chroma key frequently required high definition in the color image and, therefore, full bandwidth R, G, B is preferred. Linear key provides an alternate method for control of the overlay. **c)** Chroma keying is the process of controlling the overlay of one video image over another. The overlay is defined by a specific color or chrominance in one of the images.

Chroma Noise – a) Noise that manifests itself in a video picture as colored snow. **b)** Colors appear to be moving on screen. In color areas of picture, usually most noticeable in highly saturated reds.

Chroma Nulling – A process of generating a matte color 180 degrees out of phase with a background color and summing them hence removing all color.

Chroma Resolution – The amount of color detail available in a television system, separate from any brightness detail. In almost all television schemes, chroma resolution is lower than luminance resolution, matching visual acuity. Horizontal chroma resolution is only about 12 percent of luminance resolution in NTSC; in advanced schemes it is usually 50 percent. See also Resolution.

Chroma Simulcast – A type of scalability (which is a subset of SNR scalability) where the Enhancement Layer(s) contain only coded refinement data for the DC coefficients and all the data for the AC coefficients of the chroma components.

Chroma Trap – In an (M) NTSC or (B, D, G, H, I) PAL video signal, the luma (black and white) and the chroma (color) information are combined together. To decode the video signal, the luma and chroma must be separated. The chroma trap is a method of doing this.

Chrominance – a) The data that represents one of the two color-difference signals Cr and Cb. **b)** The color portion of a video signal that is a mixture of hue and saturation, but not of luminance (brightness). Every color signal has both chrominance and luminance. **c)** Chrominance refers to the color information in a television picture. Chrominance can be further broken down into two properties of color: hue and saturation. See Chroma.

Chrominance Component – A matrix, block or single sample representing one of the two color difference signals related to the primary colors in the manner defined in the bitstream. The symbols used for the chrominance signals are Cr and Cb.

Chrominance Format – Defines the number of chrominance blocks in a macroblock.

Chrominance Frequency Response – Describes the frequency response of the chrominance channel.

Chrominance Luminance Delay Inequality – Appears as the change in relative timing of the chrominance component relative to the luminance component of the test signal when a test signal having defined chrominance and luminance components is applied to the sending end of a television facility.

Chrominance Luminance Gain Inequality – Appears as the change in amplitude of the color component relative to the luminance component (of the test signal) when a test signal having defined chrominance and luminance components is applied to the sending end of a television facility.

Chrominance Nonlinear Gain – Present if chrominance gain is affected by chrominance amplitude. Chrominance nonlinear gain distortion is expressed in IRE or percent. It should be measured at different APL levels and typically the worst error is quoted. Picture effects include incorrect color saturation due to nonlinear gain in relatively high amplitude chrominance signals. The modulated pedestal test signal is used to test for this distortion.

Chrominance Nonlinear Phase – This distortion is present if a signal's chrominance phase is affected by chrominance amplitude. These phase errors are a result of the system's inability to uniformly process all amplitudes of high-frequency chrominance information. Chrominance nonlinear phase distortion is expressed in degrees of shift of subcarrier phase. This parameter should be measured at different APL (Average Picture Level); the worst result is quoted as the amount of distortion. Chrominance nonlinear phase distortion will cause picture hue to shift as color saturation increases. A modulated pedestal signal is used to measure this distortion. The modulated pedestal signal consists of three chrominance packets with the same phase and luminance level but each chrominance packet has increasing amplitudes of 20, 40 and 80 IRE.

Chrominance Signal – The high-frequency portion of the video signal which is obtained by quadrature amplitude modulation (QAM) of a 4.43 MHz (PAL) or 3.579545 MHz (NTSC) subcarrier with R-Y and B-Y information.

Chrominance Subsampling – Reduction of the amount of color information by either rejecting chrominance samples or by averaging adjacent chrominance samples.

Chrominance to Burst Phase – The difference between the expected phase and the actual phase of the chrominance portion of the video signal relative to burst phase.

Chrominance to Luminance Delay Distortion – The difference between the time it takes for the chrominance portion of the signal to pass through a system and the time it takes for the luminance portion to pass through. The amount of distortion is typically expressed in nanoseconds. The number is positive for delayed chrominance and negative for advanced chrominance. This distortion manifests itself in the picture as smearing or bleeding of the color particularly at the edges of objects in the picture. It may also cause poor reproduction of sharp luminance transitions. Any signal containing a 12.5T sine-squared pulse with 3.579545 MHz modulation can be used to measure chrominance-to-luminance delay distortions. Many combination signals such as FCC Composite and NTC-7 Composite contain this pulse.

Chrominance to Luminance Gain Distortion – This is the difference between the gain of the chrominance components and the gain of the luminance components as they pass through the system. The amount of distortion can be expressed in IRE, percent or dB. The number given is negative for low chrominance and positive for high chrominance. This distortion most commonly appears as attenuation or peaking of the chrominance information that shows up in the picture as incorrect color saturation. Any signal containing a 12.5T sine-squared pulse with 3.579545 MHz modulation can be used to measure chrominance-to-luminance gain distortions. Many combination signals such as FCC Composite and NTC-7 Composite contain this pulse.

Chrominance to Luminance Intermodulation – This distortion is also known as crosstalk or cross-modulation. Splice is present when luminance amplitude is affect by the superimposed chrominance. The luminance change may be caused by clipping of high-amplitude chrominance peaks, quadrature distortion or crosstalk. The modulated pedestal is used to test for this distortion. Distortions can be expressed as: IRE with the pedestal level normalized to 50 IRE, as a percentage of the pedestal level, as a percentage of the measured white bar amplitude, as a percentage of 714 mV. These definitions will yield different results under some conditions so it is very important to standardize on a single method of making intermodulation measurements. Picture effects include unwarranted brightness variations due to color saturation changes affecting the luminance.

Chromium Dioxide (CrO_2) – A modern magnetic particle oxide of the high energy type used in magnetic recording tape. Chromium dioxide is a highly acicular particle with the crystal structure of rutile. Tapes made of CrO_2 exhibit a coercivity of 425 to 475 oersteds.

Chunking – The transfer of media files in segments so other workgroup users can access and use the media before complete files have been sent.

CI (Common Interface) – CI is used for satellite receivers. Manufacturers have agreed on use a common interface for satellite decoding cards. For CI these cards (called CAM) look like PCMCIA cards, as seen with laptops, which can hold one smart card. This smart card holds the keys to the subscribed service. The CAM holds the hardware and software required for decoding the data stream (after decoding this is video and audio).

CIE (Commission Internationale de l'Eclairage) – French acronym for the International Illumination Commission. An international standardization organization that created the chromaticity diagrams (color charts) used to define the colorimetry of all television systems. The CIE is concerned with methods of measurement plus recommended practices and standards concerning the properties and applications of light.

CIE 1931 Standard Colorimetric System (XYZ) – A system for determining the tristimulus values of any spectral power distribution using the set of reference color stimuli X, Y, Z, and the three CIE color matching functions x(lambda), y(lambda), z(lambda), adopted by the CIE in 1931.

CIELab Color Space – Three-dimensional, approximately uniform color space produced by plotting in rectangular coordinates L*, a*, b* quantities defined by the following equations. X, Y, Z describe the color stimulus considered, and Xn, Yn, Zn describe a specified white achromatic stimulus

(i.e., white reference). Equal distances in the color space represent approximately equal color differences.

$L^* = 116\ (Y/Yn)^{(1/3)} - 16 \qquad Y/Yn$

$a^* = 500[(X/Xn)^{(1/3)} - (Y/Yn)^{(1/3)}] \qquad X/Xn > 0.008\ 856$

$b^* = 200[(Y/Yn)^{(1/3)} - (Z/Zn)^{(1/3)}] \qquad Z/Zn$

CIELuv Color Space – Three-dimensional, approximately uniform color space produced by plotting in rectangular coordinated L*, u*, v* quantities defined by the following equations. Y, u_, v_ describe the color stimulus considered, and Yn, u_n, v_n describe a specified white achromatic stimulus (white reference). The coordinates of the associated chromaticity diagram are u_ and v_. L* is the approximate correlation of lightness, u* and v* are used to calculate an approximate correlate of chroma. Equal distances in the color space represent approximately equal color differences.

$L^* = 116\ (Y/Yn)^{(1/3)} - 16 \qquad Y/Yn > 0.008\ 856$

$u^* = 13\ L^*\ (u\_ - u\_n)$

$V^* = 13\ L^*\ (v\_ - v\_n)$

CIF – See Common Image Format, Common Interchange Format, Common Interface Format or Common Intermediate Format.

Cinch – Interlayer slippage of magnetic tape in roll form, resulting in buckling of some strands of tape. The tape will in many cases fold over itself causing permanent vertical creases in the tape. Also, if not fixed, it will cause increased dropouts. See Windowing.

Cinch Marks – Short scratches on the surface of a motion picture film, running parallel to its length; these are caused by improper winding of the roll, permitting one coil of film to slide against another.

Cinching – a) Longitudinal slippage between the layers of tape in a tape pack when the roll is accelerated or decelerated. **b)** The wrinkling, or folding over, of tape on itself in a loose tape pack. Normally occurs when a loose tape pack is stopped suddenly, causing outer tape layers to slip, which in turn causes a buckling of tape in the region of slip. The result is large dropouts or high error rates. **c)** Videotape damage due to creasing or folding.

CinemaScope – a) Trade name of a system of anamorphic widescreen presentation. **b)** The first modern widescreen movie format, achieving a 2.35:1 aspect ratio through the use of a 2:1 anamorphic squeeze.

Cinepak – Cinepak is a compression scheme dedicated to PC environments, based on a vector quantization algorithm. CinePak is a highly asymmetrical algorithm, i.e., the encoding takes much more processing power than the decoding process. The Cinepak algorithm is developed by Radius, and is licensed by a range of companies. Both Microsoft Windows 95 and Apple's QuickTime have built in Cinepak, for instance.

Cinex Strip – A short test print in which each frame has been printed at a different exposure level.

CIRC (Cross-Interleaved Reed Solomon Code) – An error-correction coding method which overlaps small frames of data.

Circle Take – A take from a film shot that has been marked for use or printing by a circled number on the camera report.

Circuit Switching – A dedicated path is formed for the duration of the communication through switching nodes between a number of locations.

CK – See Chroma Key.

Cladding – The outer part of a fiber optics cable, which is also a fiber but with a smaller material density than the center core. It enables a total reflection effect so that the light transmitted through the internal core stays inside.

Clamp – a) A device which functions during the horizontal blanking or sync interval to fix the level of the picture signal at some predetermined reference level at the beginning of each scanning line. **b)** Also known as a DC-restoration circuit or it can also refer to a switch used within the DC-restoration circuit. When used in the context of DC restoration, then it is usually used as "clamping". When used in its switch context, then it is referred to as just "clamp".

Clamper – A device which functions during the horizontal blanking or sync interval to fix the level of the picture signal at some predetermined reference level at the beginning of each scanning line.

Clamping – a) The process that establishes a fixed level for the picture signal at the beginning of each scanning line. **b)** The process whereby a video signal is references or "clamped" to a DC level to prevent pumping or bouncing under different picture levels. Without clamping, a dark picture would bounce if a white object appeared. Changes in APL would cause annoying pulsations in the video. Clamping is usually done at zero DC level on the breezeway of the back porch of horizontal sync. This is the most stable portion of a TV picture.

Clamping Area – The area near the inner hole of a disc where the drive grips the disc in order to spin it.

Class – In the object-oriented methodology, a class is a template for a set of objects with similar properties. Classes in general, and MPEG-4 classes in particular, are organized hierarchically. This hierarchy specifies how a class relates to others, in terms of inheritance, association or aggregation, and is called a Class Library.

Clean List (Clean EDL) – An edit decision list (EDL) used for linear editing that has no redundant or overlapping edits. Changes made during offline editing often result in edits that overlap or become redundant. Most computer-based editing systems can clean an EDL automatically. Contrast with Dirty List (Dirty EDL).

Clean Rooms – Rooms whose cleanliness is measured by the number of particles of a given size per cubic foot of room volume. For example, a class 100,000 clean room may have no more than 100,000 particles one-half micron or larger per cubic foot. Similarly, for class 10,000 and class 100 rooms. In addition, a class 10,000 room may have no more than 65 five-micron particles per cubic foot, while class 100,000 may have no more than 700.

Clear – Set a circuit to a known state, usually zero.

Clear Channel – AM radio station allowed to dominate its frequency with up to 50 kW of power; their signals are generally protected for distance of up to 750 miles at night.

Click – To hold the mouse still, then press and immediately release a mouse button.

Click and Drag – A computer term for the user operation of clicking on an item and dragging it to a new location.

Cliff Effect – An RF characteristic that causes DTV reception to change dramatically with a small change in power. At the fringes of reception, current analog TV pictures degrade by becoming "snowy". With DTV, relatively small changes in received power in weak signal areas will cause the DTV picture to change from perfect to nothing and hence the name, cliff effect.

Clip – a) A video file. **b)** In keying, the trigger point or range of a key source signal at which the key or insert takes place. **c)** The control that sets this action. to produce a key signal from a video signal, a clip control on the keyer control panel is used to set a threshold level to which the video signal is compared. **d)** In digital picture manipulators, a manual selection that blanks portions of a manipulated image that leave one side of the screen and "wraps" around to enter the other side of the screen. **e)** In desktop editing, a pointer to a piece of digitized video or audio that serves as source material for editing.

Clip (Insert Adjust) – To produce a key signal from a video signal, a clip insert control on the front panel is used to set a threshold level to which the video signal is compared. In luminance keying, any video (brightness) level above the clip level will insert the key; any level below the clip level will turn the key off. The clip level is adjusted to produce an optimum key free of noise and tearing. In the Key Invert mode, this clip relationship is reversed, allowing video below the clip level to be keyed in. This is used for keying from dark graphics on a light background.

Clip Level – The level that determines at what luminance a key will cut its hole. On AVC switchers, these are the insert and border adjust controls. On 4100 series, the corresponding controls are foreground and background. See Bi-Level Keyer.

Clip Properties – A clip's specific settings, including frame size, compressor, audio rate, etc.

Clip Sheet – A nonlinear editing term for the location of individual audio/video clips (or scenes). Also known as clip bin.

Clipping – a) An electronic limit usually imposed in cameras to avoid overly bright or dark signals. When improperly applied can result in loss of picture information in very bright or very dark areas. Also used in switchers to set the cutoff point for mixing video signals. **b)** The electronic process of shearing off the peaks of either the white or black excursions of a video signal for limiting purposes. Sometimes, clipping is performed prior to modulation, and sometimes to limit the signal, so it will not exceed a predetermined level.

Clipping (Audio) – When recording audio, if an input signal is louder than can be properly reproduced by the hardware, the sound level will be cut off at its maximum. This process often causes distortion in the sound, so it is recommended that the input signal level be reduced in order to avoid this.

Clipping (Video) – With video signals, clipping refers to the process of recording a reduced image size by ignoring parts of the source image. Also referred to as cropping.

Clipping Logic – Circuitry used to prevent illegal color conversion. Some colors can be legal in one color space but not in another. To ensure a converted color is legal in one color format after being converted (transcoded) from another, the clipping logic clips the information until a legal color is represented.

Clock – Reference timing source in a system. A clock provides regular pulses that trigger or synchronize events.

Clock Doubling – Many processor chips double the frequency of the clock for central processing operations while maintaining the original frequency for other operations. This improves the computer's processing speed without requiring expensive peripheral chips like high-speed DRAM.

Clock Frequency – The master frequency of periodic pulses that are used to synchronize the operation of equipment.

Clock Jitter – a) Timing uncertainty of the data cell edges in a digital signal. **b)** Undesirable random changes in clock phase.

Clock Phase Deviation – See Clock Skew.

Clock Recovery – The reconstruction of timing information from digital data.

Clock Reference – A special time stamp that conveys a reading of a time base.

Clock Skew – A fixed deviation from proper clock phase that commonly appears in D1 digital video equipment. Some digital distribution amplifiers handle improperly phased clocks by reclocking the output to fall within D1 specifications.

Clock Timecode – See Drop-Frame Timecode.

Close Miking – Placing a mike close to the sound source in order to pick up mainly direct sound and avoid picking up reverberant sound.

Closed Captioning – Service that provides decoded text information transmitted with the audio and video signal and displays it at the bottom of the display. See (M) NTSC EIA-608 specification. Transmitted on line 21 of NTSC/525 transmissions, contains subtitling information only. For HD see EIA708 specification. CC has no support for block graphics or multiple pages but it can support 8-colors and the use of an italic typeface. Frequently found on pre-recorded VHS cassettes and LDs, also used in broadcast. Also found on PAL/625 pre-recorded VHS cassettes in a modified version.

Closed Circuit – The method of transmission of programs or other material that limits its target audience to a specific group rather than the general public.

Closed Circuit TV (CCTV) – a) A video system used in many commercial installations for specific purposes such as security, medical and educational. **b)** A television system intended for only a limited number of viewers, as opposed to broadcast TV.

Closed GOP – A group of pictures in which the last pictures do not need data from the next GOP for bidirectional coding. Closed GOP is used to make a splice point in a bit stream.

Closed Subtitles – See Subtitles.

Closed-Loop – Circuit operating with feedback, whose inputs are a function of its outputs.

Closed-Loop Drive – A tape transport mechanism in which the tape's speed and tension are controlled by contact with a capstan at each end of the head assembly.

Closeup (CU) – A camera shot that is tightly framed, with its figure or subject filling the screen. Often qualified as medium closeup or extreme closeup. See also ECU.

CLUT – See Color Lookup Table.

CLV (Constant Linear Velocity) – Spiral format of audio compact disks and some video laser disks.

C-MAC – A MAC (Multiplexed Analog Component) with audio and data time multiplexed after modulation, specified for some European DBS. See also MAC.

C-Mode – A non-sequential method of assembly in which the edit decision list (EDL) is arranged by source tape number and ascending source time-code. See also A-More, B-Mode, D-Mode, E-Mode, Source Mode.

C-Mount – The first standard for CCTV lens screw mounting. It is defined with the thread of 1" (2.54 mm) in diameter and 32 threads/inch, and the back flange-to-CCD distance of 17.526 mm (0.69"). The C-mount description applies to both lenses and cameras. C-mount lenses can be put on both, C-mount and CS-mount cameras, only in the latter case an adaptor is required.

CMTT – French acronym for the Mixed Telephone and Television Committee, an international standardization committee concerned with such issues as B-ISDN.

CMYK – Refers to the colors that make up the subtractive color system used in pigment printers: cyan, magenta, yellow and black. In the CMYK subtractive color system these pigments or inks are applied to a white surface to filter that color light information from the white surface to create the final color. Black is used because cyan, magenta and yellow cannot be combined to create a true black.

CMYK Color Space – A subtractive color space with cyan, magenta, and yellow as primary color set with an optional addition of black (K). For such a color set subtractive color mixture applies. The CMYK values used represent the amount of colorant placed onto the background medium. They include the effects of dot gain.

CNG (Comfort Noise Generator) – During periods of transmit silence, when no packets are sent, the receiver has a choice of what to present to the listener. Muting the channel (playing absolutely nothing) gives the listener the unpleasant impression that the line has gone dead. A receiver-side CNG generates a local noise signal that it presents to the listener during silent periods. The match between the generated noise and the true background noise determines the quality of the CNG.

CNR – Carrier to Noise Ratio – Indicates how far the noise level is down on carrier level.

Coating – The magnetic layer of a magnetic tape, consisting of oxide particles held in a binder that is applied to the base film.

Coating Resistance – The electrical resistance of the coating measured between two parallel electrodes spaced a known distance apart along the length of tape.

Coating Thickness – The thickness of the magnetic coating applied to the base film of a mag tape. Modern tape coatings range in thickness from 170 to 650 microinches. Coating thickness is normally optimized for the intended application. In general, thin coatings give good resolution at the expense of reduced output at long wavelengths; thick coatings give a high output at long wavelengths at the expense of degraded resolution.

Coaxial Cable – a) A transmission line with a concentric pair of signal carrying conductors. There is an inner conductor and an outer conductor metallic sheath. The sheath aids in preventing external radiation from affecting the signal on the inner conductor and mini-mizes signal radiation from the transmission line. **b)** A large cable composed of fine foil wires that is used to carry high bandwidth signals such as cable TV or cable modem data streams. **c)** The most common type of cable used for copper transmission of video signals. It has a coaxial cross-section, where the center core is the signal conductor, while the outer shield protects it from external electromagnetic interference.

Cobalt Doped Oxide – A type of costing used on magnetic recording tape. This is normally a gamma ferric oxide particle which has been doped with cobalt to achieve a higher coercivity. Modern forms of this oxide are acicular and have been used to make tapes with coercivities in excess of 1000 oersteds.

Co-Channel Interference – Interference caused by two or more television broadcast stations utilizing the same transmission channel in different cities. It is a form of interference that affects only broadcast television.

Code – a) In computers, the machine language itself, or the process of converting from one language to another. **b)** A plan for representing each of a finite number of values or symbols as a particular arrangement or sequence of discrete conditions or events. To encode is to express given information by means of a code. **c)** A system of rules defining a one-to-one correspondence between information and its representation by characters, symbols, or signal elements.

CODEC (Coding/Decoding) – a) The algorithm used to capture analog video or audio onto your hard drive. **b)** Used to implement the physical combination of the coding and decoding circuits. **c)** A device for converting signals from analog to coded digital and then back again for use in digital transmission schemes. Most codecs employ proprietary coding algorithms for data compression. See Coder-Decoder.

Coded Audiovisual Object (Coded AV Object) – The representation of an AV object as it undergoes parsing and decompression that is optimized in terms of functionality. This representation consists of one stream object, or more in the case of scalable coding. In this case, the coded representation may consist of several stream objects associated to different scalability layers.

Coded Bitstream – A coded representation of a series of one or more pictures and/or audio signals.

Coded Data – Data elements represented in their encoded (compressed) form.

Coded Description – A description that has been encoded to fulfill relevant requirements such as compression efficiency, error resilience, random access, etc.

Coded Order – The order in which the pictures are stored and decoded. This order is not necessarily the same as the display order.

Coded Orthogonal Frequency Division Multiplex – A modulation scheme used for digital transmission that is employed by the European DVB system. It uses a very large number of carriers (hundreds or thousands), each carrying data at a very low rate. The system is relatively insensitive to doppler frequency shifts, and can use multipath signal constructively. It is, therefore, particularly suited for mobile reception and for single-frequency networks. A modified form of OFDM.

Coded Picture – An MPEG coded picture is made of a picture header, the optional extensions immediately following it, and the following compressed picture data. A coded picture may be a frame picture or a field picture.

Coded Representation – A data element as represented in its encoded form.

Coded Video Bitstream – A coded representation of a series of one or more VOPs as defined in this specification.

Code-Excited Linear Prediction – a) Audio encoding method for low bit rate codecs. **b)** CELP is a speech coding algorithm that produces high quality speech at low rates by using perceptual weighting techniques.

Coder-Decoder – Used to implement the physical combination of the coding and decoding circuits.

Coding – Representing each level of a video or audio signal as a number, usually in binary form.

Coding Parameters – The set of user-definable parameters that characterize a coded video bit stream. Bit streams are characterized by coding parameters. Decoders are characterized by the bit streams that they are capable of decoding.

Coefficient – a) A number (often a constant) that expresses some property of a physical system in a quantitative way. **b)** A number specifying the amplitude of a particular frequency in a transform.

Coefficient of Friction – The tangential force required to maintain (dynamic coefficient) or initiate (static coefficient) motion between two surfaces divided by the normal force pressing the two surfaces together.

Coefficient of Hygroscopic Expansion – The relative increase in the linear dimension of a tape or base material per percent increase in relative humidity measured in a given humidity range.

Coefficient of Thermal Expansion – The relative increase in the linear dimension of a tape or base material per degree rise in temperature (usually Fahrenheit) measured in a given temperature range.

Coefficient Recording – A form of data bit-rate reduction used by Sony in its digital Betacam format and with its D-2 component recording accessory, the DFX-C2. Coefficient recording uses a discrete cosine transformation and a proprietary information handling scheme to lower the data rate generated by a full bit-rate component digital signal. Such a data bit-rate reduction system allows component digital picture information to be recorded more efficiently on VTRs.

Coercivity – Measured in oersteds, the measurement of a magnetic characteristic. The demagnetizing force required to reduce the magnetic induction in a magnetic materiel to zero from its saturated condition.

COFDM (Coded Orthogonal Frequency Division Multiplex) – A digital coding scheme for carrying up to 6875 single carriers 1 kHz apart which are QAM modulated with up to 64 states. "Coded" means that the data to be modulated has error control. Orthogonality means that the spectra of the individual carriers do not influence each other as a spectral maximum always coincides with a spectrum zero of the adjacent carriers. A single-frequency network is used for the actual transmission.

Coherent – Two or more periodic signals that are phase-locked to a common submultiple. The subcarrier of a studio quality composite video signal is coherent with its sync.

Collision – The result of two devices trying to use a shared transmission medium simultaneously. The interference ruins both signals, requiring both devices to retransmit the data lost due to collision.

Color Back Porch – Refer to the Horizontal Timing discussion.

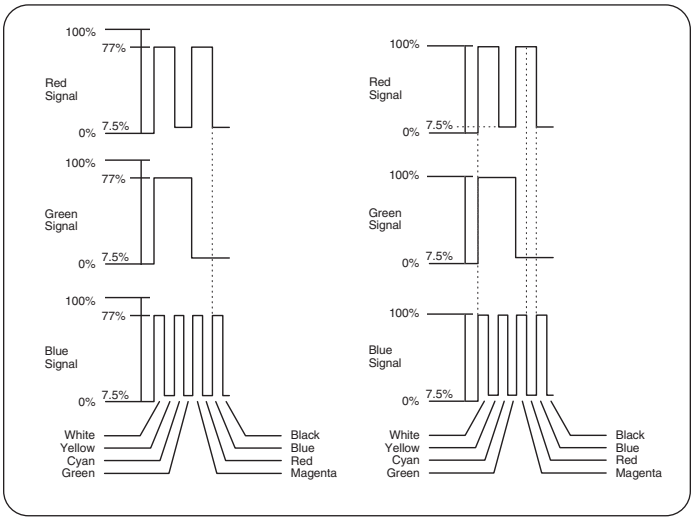
Color Background Generator – a) A circuit that generates a full-field solid color for use as a background in a video picture. **b)** A device that produces a full-frame color, normally used as a background for various graphics effects, the output of which is selectable on the last button of all switcher buses.

Color Balance – Adjustment of color in the camera to meet a desired standard, i.e., color bar, sponsor's product, flesh tones. Also may be referred to as "white balance".

Color Bar Test Signal – Originally designed to test early color camera encoders, it is commonly (albeit incorrectly) used as a standard test signal. The saturated color bars and luminance gray bar are usually used to check monitors for color accuracy. The saturated color bars are a poor test of any nonlinear circuit or system and at best, show video continuity. Testing a video system using color bars is analogous to testing an audio system using a simple set of monotonal frequencies. Many color TV test signals have been developed to accurately assess video processing equipment such as ADCs, compressors, etc.

Color Bars – A video test signal widely used for system and monitor setup. The test signal, typically containing eight basic colors: white, yellow, cyan, green, magenta, red, blue and black, is used to check chrominance functions of color TV systems. There are two basic types of color bar signals in common use. The terms "75% bars" and "100% bars" are generally used to distinguish between the two types. While this terminology is widely used, there is often confusion about exactly which parameters the 75% versus 100% notation refer to. **a) RGB Amplitudes –** The 75%/100% nomenclature specifically refers to the maximum amplitudes reached by the Red, Green and Blue signals when hey form the six primary and secondary colors required for color bars. For 75% bars, the maximum amplitude of the RGB signals is 75% of the peak white level. For 100% bars, the RGB signals can extend up to 100% of peak white. Refer to the following two figures. **b) Saturation –** Both 75% and 100% amplitude color bars are 100% saturated. In the RGB format, colors are saturated if at least one of the primaries is at zero. Note: In the two associated figures that the zero signal level is at setup (7.5 IRE) for NTSC. **c) The Composite Signal –** In the composite signal, both chrominance and luminance amplitudes vary according to the 75%/100% distinction. However, the ratio between chrominance and luminance amplitudes remains constant in order to

maintain 100% saturation. **d) White Bar Levels –** Color bar signals can also have different white bar levels, typically either 75% or 100%. This parameter is completely independent of the 75%/100% amplitude distinction and either white level may be associated with either type of bars. **e) Effects of Setup –** Because of setup, the 75% signal level for NTSC is at 77 IRE. The maximum available signal amplitude is 100-7.5 or 92.5 IRE. 75% of 92.5 IRE is 69.4 IRE, which when added to the 7.5 IRE pedestal yields a level of approximately 77 IRE.



Color Black – A composite video signal that produces a black screen when viewed on a television receiver.

Color Burst – a) The portion of a color video signal that resides on the backporch between the breezeway and the start of active video which contains a sample of the color subcarrier used to add color to a signal. It is used as a color synchronization signal to establish a reference for the color information following it and is used by a color monitor to decode the color portion of a video signal. The color burst acts as both amplitude and phase reference for color hue and intensity. The color oscillator of a color television receiver is phase locked to the color burst. **b)** A nine-cycle-NTSC burst of color subcarrier which is imposed on blanking after sync. Color burst serves as the reference for establishing the picture color.

Color Carrier – The sub-frequency in a color video signal (4.43 MHz for PAL) that is modulated with the color information. The color carrier frequency is chosen so its spectrum interleaves with the luminance spectrum with minimum interference.

Color Coordinate Transformation – Computation of the tristimulus values of colors in terms of one set of primaries from the tristimulus values of the same colors in another set of primaries. Note: This computation may be performed electrically in a color television system.

Color Correction – a) A process by which the coloring in a television image is altered or corrected electronically. Care must be taken to insure that the modified video does not exceed the limits of subsequent processing or transmission systems. **b)** The adjustment of a color reproduction process to improve the perceived-color conformity of the reproduction to the original.

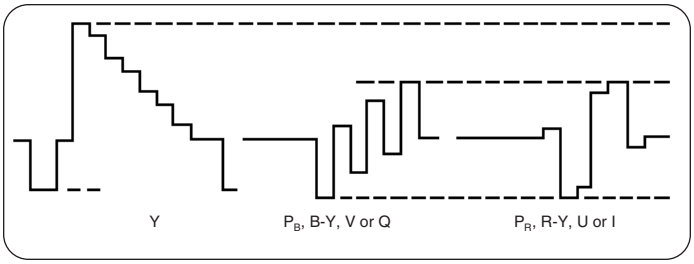
Color Cycling – A means of simulating motion in a video by changing colors.

Color Decoder – a) A device that divides a video signal into its basic color components. In TV and video, color decoding is used to derive signals required by a video monitor from the composite signals. **b)** Video function that obtains the two color difference signals from the chrominance part of an NTSC/PAL signal. See Chroma Demodulators.

Color Demodulator – See Chroma Demodulators.

Color Depth – The number of levels of color (usually including luma and chroma) that can be represented by a pixel. Generally expressed as a number of bits or a number of colors. The color depth of MPEG video in DVD is 24 bits, although the chroma component is shared across 4 pixels (averaging 12 actual bits per pixel).

Color Difference Signals – Signals used by color television systems to convey color information (not luminance) in such a way that the signals go to zero when there is no color in the picture. Color difference signal formats include: R-Y and B-Y; I and Q; U and V; PR and PB. The following figure show general color difference waveforms along with the Y signal. The color difference signal shown above must first be converted in their RGB form before they can recreate the picture. Refer to the RGB discussion to view what the RGB version of the color bar signal looks like. The color difference signals in the figure described above are centered around 0 volts but this is only true for the SMPTE/EBU N10 standard. The NTSC and M11 color difference standards have the most negative portions of the color difference signals riding on a voltage of 0 volts or close to it.



Color Edging – Spurious colors appearing along the edges of color pictures, but that do not have a color relationship to the picture.

Color Encoder – Performs the reverse function of the chroma demodulator in that it combines the two color difference signals into the single chroma signal.

Color Field – In the NTSC system, the color subcarrier is phase-locked to the line sync so that on each consecutive line, subcarrier phase is changed 180º with respect to the sync pulses. In the PAL system, color subcarrier phase moves 90º every frame. In NTSC this creates four different field types, while in PAL there are eight. In order to make clean edits, alignment of color field sequences from different sources is crucial.

Color Frame – a) In NTSC color television, it takes four fields to complete a color frame. In PAL, it takes eight fields. **b)** Polarity of the video frame. Color frame must alternate polarity with each frame to keep the video signal in phase. **c)** A sequence of video fields required to produce a complete pattern of both field and frame synchronization and color subcarrier synchronization. The NTSC system requires four fields; PAL requires eight.

Color Frame Timed – See the Color Framed discussion.

Color Framed – Two signals are said to be color framed at a switcher or router when their field 1, line 10 events (field 1, line 7 in PAL) occur at the same time at the input to the switcher or router. To prevent picture distortions when changing signals at a switcher or router, the signals must be color framed.

Color Gamut – In a system employing three color primaries to encode image color, each primary can be located on a CIE chromaticity diagram and these points connected as a plane figure. If the apexes are then connected with an appropriate value on the white point axis, a so) id figure is produced enclosing the color gamut for that system. (On the CIE chromaticity diagrams, the points in x, y, z space approximate an inverted tetrahedron. In u, v, w space, they become a somewhat irregular four-cornered solid.) Colors within the color gamut solid volume can be reproduced by the system as metameric matches. Colors outside the color gamut solid volume cannot be matched. Note: The area of the cross-section from the color gamut solid is a function of the luminance. Although it is advantageous to have the widest possible color gamut for the ability to provide metameric matches for the largest number of colors, the required transformations from origination colorimetry to colorimetry matched to available display primaries, for example, may require large matrix coefficients and, therefore, a signal-to-noise penalty. The choice of color gamut is a compromise between color rendition and signal-to-noise.

Color Key – See Chroma Key.

Color Keying – To superimpose one image over another for special effects.

Color Killer – Circuitry which disables the receiver's color decoder if the video does not contain color information.

Color Lookup Table (CLUT) – The CLUT is a compression scheme where pixel values in the bitmap represent an index into a color table where the table colors have more bits-per-pixel than the pixel values. In a system where each pixel value is eight bits, there are 256 possible values in the lookup table. This may seem a constraint but, since multiple lookup tables can be referenced, there can be many tables with varying 256 color schemes. CLUTs work best for graphics where colors do not have to be natural.

Color Map – A color map is just a numbered list of colors. Each color is specified in terms of its red, green, and blue components.

Color Map Animation – In normal animation, the images representing separate frames are written on separate pieces of artwork. In computer color map animation, many images can be written into a frame buffer, each with a different color number. By 'cycling' white, for example, through the color map, so that only one image at a time is visible, the illusion of animation can be achieved very quickly. PictureMaker's wireframe test mode works this way.

Color Mapping – Color mapping is distinguished by the following: **a)** Each pixel contains a color number (or address) referring to a position in a color map. Each pixel has 'n' bits, so there are '2 to the n' color map addresses. **b)** A hardware device called the color map defines the actual RGB values for each color.

Color Masking – A method of correcting color errors which are fundamental in any three primary color additive reproducing system, by electrically changing the R, G and B signals with a matrix or masking amplifier which mixes (usually subtracts) the signals in a very precise predetermined amount. The form is generally as follows. Note that a, b, c, d, e and f are referred to as the masking or correction coefficients.

R out = R in + a (G-R) + b (R-B)

G out = G in + c (G-R) + d (B-G)

B out = B in + e (R-B) + f (B-G)

Color Match, Corresponding – A corresponding color is defined as the stimulus that, under some different condition of adaptation, evokes the same color appearance as another stimulus when it was seen under the original state of adaptation. Color match, corresponding is a subjective judgment.

Color Match, Metameric – a) Color images are metameric matches when their spectrally different color stimuli have identical tristimulus values. The requirements for such a metameric match can be calculated for a specified viewing condition (and for viewing conditions other than those specified, the chromaticity will not be judged to correspond). **b)** The corresponding color chosen for the metameric match will not provide a spectrophotometric match. In practical applications, spectrophotometric matches are of only academic interest, and metameric matches are sought. **c)** Color match, metameric, resulting from calculations based upon colorimetry, produces a visual match as evaluated by the CIE description of human observers.

Color Model – Any of several means of specifying colors according to their individual components. See RGB, YUV.

Color Modulator – See Color Encoder.

Color Palette – A component of a digital video system that provides a means of establishing colors (foreground and background) using a color lookup table to translate a limited set of pixel values into a range of displayable colors by converting the colors to RGB format.

Color Phase – a) The phase of the chroma signal as compared to the color burst, is one of the factors that determines a video signal's color balance. **b)** The timing relationship in a video signal that is measured in degrees and keeps the hue of a color signal correct.

Color Picker – A tool used to plot colors in an image.

Color Plane – In planar modes, the display memory is separated into four independent planes of memory, with each plane dedicated to controlling one color component (red, green, blue and intensify). Each pixel of the display occupies one bit position in each plane. In character modes and packed-pixel modes, the data is organized differently.

Color Primaries – Red, green and blue light.

Color Processing – A way to alter a video signal to affect the colors. The Video Equalizer is suited to this task. See Chroma Corrector.

Color Purity – Describes how close a color is to the mathematical representation of the color. For example, in the Y'UV color space, color purity is specified as a percentage of saturation and +/-q, where q is an angle in degrees, and both quantities are referenced to the color of interest. The

smaller the numbers, the closer the actual color is to the color that it is really supposed to be. For a studio-grade device, the saturation is +/-2% and the hue is +/-2 degrees.

Color Reference Burst – The color synchronizing signal included as part of the overall composite video signal. When compared with the color subcarrier signal, the color reference burst determines the hue of the video image.

Color Reversal Intermediate (CRI) – A duplicate color negative prepared by reversal processing.

Color Saturation – This is the attribute of color perception determining the degree of its difference from the achromatic color perception most resembling it. An achromatic color perception is defined as one not possessing a hue/color. In other words, how much "color" is in an object.

Color Space – The mathematical representation of a color. a) Regardless of the color space used, RGB, YIQ, YUV, a color will appear the same on the screen. What is different is how the color is represented in the color space. In the HLS color space are represented based on three-dimensional polar coordinate system where as in the RGB color space, colors are represented by a Cartesian coordinate system. b) Many ways have been devised to organize all of a system's possible colors. Many of these methods have two things in common: a color is specified in terms of three numbers, and by using the numbers as axes in a 3D space of some sort, a color solid can be defined to represent the system. Two spaces are popular for computer graphics: RGB and HSV.

Color Space, Reference – Geometric representation of colors in space, usually of three dimensions. There are three reference spaces recognized by ISO 8613: CMYK color space; CIELuv color space; and R, G, B color space.

Color Standard – The parameters associated with transmission of color information. For example, RGB, YCbCr or MAC component color standards or NTSC, PAL or SECAM composite color standards.

Color Subcarrier – The signal used to modulate the color information in the color encoder and demodulate the color information in the color decoder. For (M) NTSC the frequency of the color subcarrier is about 3.579545 MHz and for (B, D, G, H, I) PAL it's about 4.43 MHz.

Color Temperature – The amount and color of light being given off by an object and is based on the concept of a "black body". A black absorbs all incident light rays and reflects none. If the black body is heated, it begins to emit visible light rays; first dull red, then red, then through orange to "white heat". It can be likened to the heating of metal. If a metal object is heated enough, the metal body will emit the array of colors mentioned above until the object achieves a bluish white light. The amount of light being emitted by the body can then be correlated to the amount of "heat" it would take to get the body that hot and that heat can be expressed in terms of degrees Kelvin. Objects that give off light equivalent to daylight have a temperature of about 6,500 degrees Kelvin. Colors with a bluish tint, have a color temperature of about 9,000 degrees Kelvin.

Color Timing – The process wherein colors are referenced and alternate odd and even color fields are matched to ensure colors match from shot to shot. Most commonly found in high-end equipment, such as Betacam SP.

Color Under – A degenerate form of composite color in which the subcarrier is crystal stable but not coherent with line rate. The term derives from the recording technique used in U-Matic, Betamax, VHS and 8 mm videotape recorders, where chroma is heterodyned onto a subcarrier whose frequency is a small fraction of that of NTSC or PAL. The heterodyning process looses the phase relationship of color subcarrier to sync.

Color Wheel – A circular graph that maps hue values around the circumference and saturation values along the radius. Used in the color correction tool as a control for making hue offset and secondary color correction adjustments.

Color, Additive – Over a wide range of conditions of observation, many colors can be matched completely by additive mixtures in suitable amounts of three fixed primary colors. The choice of three primary colors, though very wide, is not entirely arbitrary. Any set that is such that none of the primaries can be matched by a mixture of the other two can be used. It follows that the primary color vectors so defined are linearly independent. Therefore, transformations of a metameric match from one color space to another can be predicted via a matrix calculation. The limitations of color gamut apply to each space. The additive color generalization forms the basis of most image capture, and of most self-luminous displays (i.e., CRTs, etc.).

Color, Primary – a) The colors of three reference lights by whose additive mixture nearly all other colors may be produced. **b)** The primaries are chosen to be narrow-band areas or monochromatic points directed toward green, red, and blue within the Cartesian coordinates of three-dimensional color space, such as the CIE x, y, z color space. These primary color points together with the white point define the colorimetry of the standardized system. **c)** Suitable matrix transformations provide metameric conversions, constrained by the practical filters, sensors, phosphors, etc. employed in order to achieve conformance to the defined primary colors of the specified system. Similar matrix transformations compensate for the viewing conditions such as a white point of the display different from the white point of the original scene. **d)** Choosing and defining primary colors requires a balance between a wide color gamut reproducing the largest number of observable surface colors and the signal-to-noise penalties of colorimetric transformations requiring larger matrix coefficients as the color gamut is extended. **e)** There is no technical requirement that primary colors should be chosen identical with filter or phosphor dominant wavelengths. The matrix coefficients, however, increase in magnitude as the available display primaries occupy a smaller and smaller portion of the color gamut. (Thus, spectral color primaries, desirable for improved colorimetry, become impractical for CRT displays.) **f)** Although a number of primary color sets are theoretically interesting, CCIR, with international consensus, has established the current technology and practice internationally that is based (within measurement tolerances) upon the following: Red – x = 0.640, y = 0.330; Green – x = 0.300, y = 0.600; Blue – x = 0.150, y = 0.060. g) SMPTE offers guidance for further studies in improving color rendition by extending the color gamut. With regard to color gamut, it is felt that the system should embrace a gamut at least as large as that represented by the following primaries: Red – x = 0.670, y = 0.330; Green – x = 0.210, y = 0.710; Blue – x = 0.150, y = 0.060.

Color, Subjective – Subtractive colorimetry achieves metameric matching by removing portions of the spectrum from white light. The subtractive counterparts to the additive color primaries are those which when removed from white leave the red, green, and blue accordingly cyan, magenta, and yellow. Combinations of these subtractive colors in various add mixtures provide metameric matches to many colors. Subtractive color principles are employed in all hard-copy color images and in light-valve systems such as color transparencies, LCD panel display, motion-picture films, etc.

Colorimetry – a) Characteristics of color reproduction including the range of colors that a television system can reproduce. Some ATV schemes call for substantially different colorimetry (with a greater range) than NTSC's. **b)** The techniques for the measurement of color and for the interpretation of the results of such computations. Note: The measurement of color is made possible by the properties of the eye, and is based upon a set of conventions.

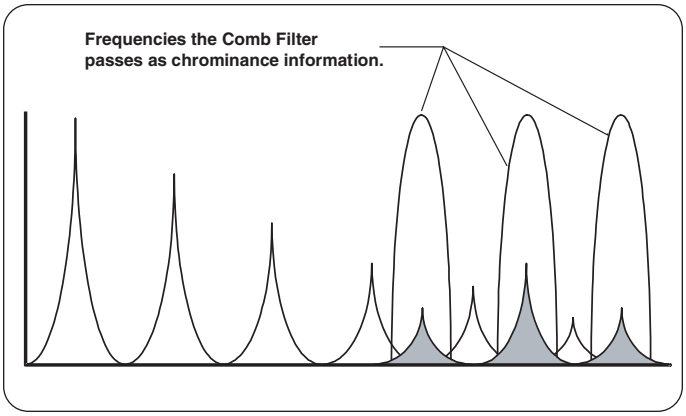
Colorist – The title used for someone who operates a telecine machine to transfer film to video. Part of the process involves correcting the video color to match the film.

Colorization – Special effect (also called paint) which colors a monochrome or color image with artificial colors. This feature is found on both the Digital Video Mixer and Video Equalizer.

Color-Matching Functions – a) The tristimulus values of monochromatic stimuli of equal radiant power. The three values of a set of color-matching functions at a given wavelength are called color-coefficients. The color-matching functions may be used to calculate the tristimulus values of a color stimulus from the color stimulus function. **b)** The tristimulus value per unit wavelength interval and unit spectral radiant flux. **c)** A set of three simultaneous equations used to transform a color specification from one set of matching stimuli to another. Note: Color-matching functions adopted by the CIE are tabulated as functions of wavelength throughout the spectrum and are given in Section 13.5 of ANSI/IES RP16-1986.

ColorStream, ColorStream Pro, ColorStream HD – The name Toshiba uses for the analog YPbPr video interface on their consumer equipment. If the interface supports progressive SDTV resolutions, it is called ColorStream Pro. If the interface supports HDTV resolutions, it is called ColorStream HD.

Comb Filter – This is a filter that can be used to separate luminance from chrominance in the NTSC or PAL composite video systems. The figure below shows a signal amplitude over frequency representation of the luminance and chrominance information that makes up the composite video signal. The peaks in gray are the chroma information at the color carrier frequency. Note how the chroma information falls between the luminance information that is in white. The comb filter is able to pass just energy found in the chroma frequency areas and not the luminance energy. This selective bandpass profile looks likes the teeth of a comb and thus the name comb filter. The comb filter has superior filtering capability when compared to the chroma trap because the chroma trap acts more like a notch filter.



Comb – Used on encoded video to select the chrominance signal and reject the luminance signal, thereby reducing cross-chrominance artifacts or conversely, to select the luminance signal and reject the chrominance signal, thereby reducing cross-luminance artifacts.

Combination Tone – A tone perceived by the ear which is equal in frequency to the sum or difference of the frequencies of two loud tones that differ by more than 50 Hz.

Combinational Logic – Circuit arrangement in which the output state is determined only by the present states of two or more inputs. Also called Combinatorial Logic.

Combiner – In digital picture manipulators, a device that controls the way in which two or more channels work together. Under software control, it determines the priority of channels (which picture appears in front and which in back) and the types of transitions that can take place between them.

Combo Box – In Microsoft™ Windows, a combination of a text and a list box. You can either type the desired value or select it from the list.

Combo Drive – A DVD-ROM drive capable of reading and writing CD-R and CD-RW media. May also refer to a DVD-R or DVD-RW or DVD+RW drive with the same capability.

Command Buttons – In Microsoft™ Windows, "button-shaped" symbols that are "pressed" ("clicked on"/chosen) to perform the indicated action.

Comment Field – Field within an instruction that is reserved for comments. Ignored by the compiler or the assembler when the program is converted to machine code.

Common Carrier – Telecommunication company that provides communications transmission services to the public.

Common Data Rate (CDR) – In the search for a single worldwide standard for HDTV, one proposal is to establish a common data rate, to be independent of line structure, frame rate, and sync/blanking.

Common Image Format (CIF) – The standardization of the structure of the samples that represent the picture information of a single frame in digital HDTV, independent of frame rate and sync/blank structure.

Common Interchange Format (CIF) – A 352 x 240 pixel format for 30 fps video conferencing.

Common Interface Format (CIF) – This video format was developed to easily allow video phone calls between countries. The CIF format has a resolution of 352 x 288 active pixels and a refresh rate of 29.97 frames per second.

Common Intermediate Format (CIF) – Picture format. For this ITU defined CIF frame, Y is 352 pixels x 288 lines, and Cb and Cr are 176 pixels x 144 lines each. This frame structure is independent of frame rate and sync structure for all digital TV formats. Uncompressed bit rate is 36.45 Mbps at 29.97 frames/sec.

Communication Protocol – A specific software based protocol or language for linking several devices together. Communication protocols are used between computers and VCRs or edit controllers to allow bidirectional "conversation" between the units. See RS-232/RS-422.

Compact Cassette – A small (4 x 2-1/2 x 1/2") tape cartridge developed by Philips, containing tape about 1/7" wide, running at 1-7/8 ips. Recordings are bidirectional, with both stereo tracks adjacent for compatibility with monophonic cassette recorders; whose heads scan both stereo tracks at once.

Compact Disc (CD) – A compact disc is a 12cm optical disc that stores encoded digital information (typically audio) in the constant linear velocity (CLV) format. For high-fidelity audio/music, it provides 74 minutes of digital sound, 90 dB signal-to-noise ratio and no degradation from playback.

Compact Disc Interactive (CD-I) – It is meant to provide a standard platform for mass consumer interactive multimedia applications. So it is more akin to CD-DA, in that it is a full specification for both the data/code and standalone playback hardware: a CD-I player has a CPU, RAM, ROM, OS, and audio/video (MPEG) decoders built into it. Portable players add an LCD screen and speakers/phone jacks. It has limited motion video and still image compression capabilities. It was announced in 1986, and was in beta test by spring 1989. This is a consumer electronics format that uses the optical disc in combination with a computer to provide a home entertainment system that delivers music, graphics, text, animation, and video in the living room. Unlike a CD-ROM drive, a CD-I player is a standalone system that requires no external computer. It plugs directly into a TV and stereo system and comes with a remote control to allow the user to interact with software programs sold on discs. It looks and feels much like a CD player except that you get images as well as music out of it and you can actively control what happens. In fact, it is a CD-DA player and all of your standard music CDs will play on a CD-I player; there is just no video in that case. For a CD-I disk, there may be as few as 1 or as many as 99 data tracks. The sector size in the data tracks of a CD-I disk is approximately 2 kbytes. Sectors are randomly accessible, and, in the case of CD-I, sectors can be multiplexed in up to 16 channels for audio and 32 channels for all other data types. For audio these channels are equivalent to having 16 parallel audio data channels instantly accessible during the playing of a disk.

Compact Disc Read Only Memory – a) CD-ROM means "Compact Disc Read Only Memory". A CD-ROM is physically identical to a Digital Audio Compact Disc used in a CD player, but the bits recorded on it are interpreted as computer data instead of music. You need to buy a CD-ROM Drive and attach it to your computer in order to use CD-ROMs. A CD-ROM has several advantages over other forms of data storage, and a few disadvantages. A CD-ROM can hold about 650 megabytes of data, the equivalent of thousands of floppy disks. CD-ROMs are not damaged by magnetic fields or the x-rays in airport scanners. The data on a CD-ROM can be accessed much faster than a tape, but CD-ROMs are 10 to 20 times slower than hard disks. **b)** A flat metallic disk that contains information that you can view and copy onto your own hard disk; you cannot change or add to its information.

Companding – See Compressing-Expanding.

Comparator – A circuit that responds to the relative amplitudes of two inputs, A and B, by providing a binary output, Z, that indicates A>B or A<B.. The comparator has two inputs, X, Y, and one output, Z. A comparator "compares" A to B. If A is larger than B, the output of the comparator is a "1". If A is smaller than B, then the output is a "0". If A = B, the output Z may be undefined and oscillate between "1" and "0" wildly until that condition is removed it may be a "1", or it may be a "0". It depends on how the comparator was designed. The comparator implements the following mathematical function.

If $A - B > 0$, then $Z = 1$

If $A - B < 0$, then $Z = 0$

Compatibility – A complex concept regarding how well ATV schemes work with existing television receivers, transmission channels, home video equipment, and professional production equipment. See also Channel-Compatible, Receiver-Compatible.

A. ATV Receiver Compatibility Levels
   - Level 5 – ATV signal is displayed as ATV on an NTSC TV set
   - Level 4 – ATV signal appears as highest quality NTSC on an NTSC TV set
   - Level 3 – ATV signal appears as reduced quality NTSC on an NTSC TV set
   - Level 2 – ATV signal requires inexpensive adapter for an NTSC TV set
   - Level 1 – ATV signal requires expensive adaptor for an NTSC TV set
   - Level 0 – ATV signal cannot be displayed on an NTSC TV set

B. Compatible ATV Transmission Schemes
   - Receiver-compatible and channel-compatible single 6 MHz channel
   - Receiver-compatible channel plus augmentation channel
   - Necessarily adjacent augmentation channel
   - Not necessarily adjacent augmentation channel
   - Non-receiver-compatible channel plus simulcast channel

Compatible Video Consortium (CVC) – An organization established by Cox Enterprises and Tribune Broadcasting, which together own 14 television stations, 24 CATV systems, and two production companies. The CVC, which is open to other organizations, was created to support ATV research and is currently supporting Del Ray's HD-NTSC system.

Compile – To compute an image or effect using a nonlinear editing, compositing or animation program. The result is generally saved in a file on the computer. Also called Render.

Compiler – Translation program that converts high-level program instructions into a set of binary instructions (machine code) for execution. Each high-level language requires a compiler or an interpreter. A compiler translates the complete program, which is then executed.

Complement – Process of changing each 1 to a 0 and each 0 to a 1.

Complex Surface – Consists of two or more simple surfaces attached or connected together using specific operations.

Component – a) A matrix, block or single pel from one of the three matrices (luminance and two chrominance) that make up a picture. **b)** A television system in which chrominance and luminance are distributed separately; one of the signals of such a television system; or one of the signals that comprise an ATV system (e.g., the widescreen panels component).

Component (Elementary Stream) – One or more entities which together make up an event, e.g., video, audio, teletext.

Component Analog – The unencoded output of a camera, videotape recorder, etc., consisting of three primary color signals: red, green, and blue (RGB) that together convey all necessary picture information. In some component video formats, these three components have been translated into a luminance signal and two color difference signals, for example, Y, B-Y, R-Y.

Component Color – Structure of a video signal wherein the R', G', and B' signals are kept separate from each other or wherein luminance and two band-limited color-difference signals are kept separate from one another. The separation may be achieved by separate channels, or by time-division multiplexing, or by a combination of both.

Component Digital – A digital representation of a component analog signal set, most often Y, B-Y, R-Y. The encoding parameters are specified by CCIR 601. The parallel interface is specified by ITU-r BT.601-2 656 and SMPTE 125M (1991).

Component Digital Post Production – A method of post production that records and processes video completely in the component digital domain. Analog sources are converted only once to the component digital format and then remain in that format throughout the post production process.

Component Gain Balance – This refers to ensuring that each of the three signals that make up the CAV information are amplified equally. Unequal amplification will cause picture lightness or color distortions.

Component Video – Video which exists in the form of three separate signals, all of which are required in order to completely specify the color picture with sound. Most home video signals consist of combined (composite) video signals, composed of luminance (brightness) information, chrominance (color) information and sync information. To get maximum video quality, professional equipment (Betacam and MII) and some consumer equipment (S-VHS and Hi-8) keep the video components separate. Component video comes in several varieties: RGB (red, green, blue), YUV (luminance, sync, and red/blue) and Y/C (luminance and chrominance), used by S-Video (S-VHS and Hi-8) systems. All Videonics video products support the S-Video (Y/C) component format in addition to standard composite video.

Composite – A television system in which chrominance and luminance are combined into a single signal, as they are in NTSC; any single signal comprised of several components.

Composite Analog – An encoded video signal, such as NTSC or PAL video, that includes horizontal and vertical synchronizing information.

Composite Blanking – The complete television blanking signal composed of both line rate and field rate blanking signals. See Line Blanking and Field Blanking.

Composite Chroma Key – a) Also known as encoded chroma key. A chroma key which is developed from a composite video source, i.e., off of tape, rather than the components, i.e., RGB, R-Y B-Y. **b)** A chroma key wherein the keying signal is derived from a composite video signal, as opposed to an RGB chroma key. See Chroma Key.

Composite Color – Structure of a video signal wherein the luminance and two band-limited color-difference signals are simultaneously present in the channel. The format may be achieved by frequency-division multiplexing, quadrature modulation, etc. It is common to strive for integrity by suitable separation of the frequencies, or since scanned video signals are highly periodic, by choosing frequencies such that the chrominance information is interleaved within spectral regions of the luminance signal wherein a minimum of luminance information resides.

Composite Color Signal – A signal consisting of combined luminance and chrominance information using frequency domain multiplexing. For example, NTSC and PAL video signals.

Composite Digital – A digitally encoded video signal, such as NTSC or PAL video, that includes horizontal and vertical synchronizing information.

Composite Image – An image that contains elements selected from two or more separately originated images.

Composite Print – A motion picture print with both picture and sound on the same strip of film.

Composite Sync – a) Horizontal and vertical sync pulses combined. Often referred to simply as "sync". Sync is used by source and monitoring equipment. **b)** A signal consisting of horizontal sync pulses, vertical sync pulses and equalizing pulses only, with a no-signal reference level.

Composite Video – a) A single video signal containing all of the necessary information to reproduce a color picture. Created by adding quadrature amplitude modulated R-Y and B-Y to the luminance signal. A video signal that contains horizontal, vertical and color synchronizing information. **b)** A complete video including all synchronizing pulses, may have all values of chroma, hue and luminance, may also be many sources layered.

Composite Video Signal – A signal in which the luminance and chrominance information has been combined using one of the coding standards NTSC, PAL, SECAM, etc.

Composited Audiovisual Object (Composited AV Object) – The representation of an AV object as it is optimized to undergo rendering.

Compositing – Layering multiple pictures on top of each other. A cutout or matte holds back the background and allows the foreground picture to appear to be in the original picture. Used primarily for special effects.

Composition – a) Framing or makeup of a video shot. **b)** The process of applying scene description information in order to identify the spatio-temporal attributes of media objects.

Composition Information – See Scene Description.

Composition Layer – The MPEG-4 Systems Layer that embed the component sub-objects of a compound AV object in a common representation space by taking into account the spatio-temporal relationships between them (Scene Description), before rendering the scene.

Composition Memory (CM) – A random access memory that contains composition units.

Composition Parameters – Parameters necessary to compose a scene (place an object in a scene). These include displacement from the upper left corner of the presentation frame, rotation angles, zooming factors.

Composition Time Stamp (CTS) – An indication of the nominal composition time of a composition unit.

Composition Unit (CU) – An individually accessible portion of the output that a media object decoder produces from access units.

Compress – a) The process of converting video and audio data into a more compact form for storage or transmission. **b)** A digital picture manipulator effect where the picture is squeezed (made proportionally smaller).

Compressed Serial Digital Interface (CSDI) – A way of compressing digital video for use on SDI-based equipment proposed by Panasonic. Now incorporated into Serial Digital Transport Interface.

Compressing-Expanding – Analog compression is used at one point in the communications path to reduce the amplitude range of the signals, followed by an expander to produce a complementary increase in the amplitude range.

Compression – a) The process of electronically processing a digital video picture to make it use less storage or to allow more video to be sent down a transmission channel. **b)** The process of removing picture data to decrease the size of a video image. **c)** The reduction in the volume of data from any given process so that more data can be stored in a smaller space. There are a variety of compression schemes that can be applied to data of which MPEG-1 and MPEG-2 are called lossy since the data produced by compression is not totally recoverable. There are other compression schemes that are totally recoverable, but the degree of compression is much more limited.

Compression (Amplitude) – a) Data Transmission – A process in which the effective gain applied to a signal is varied as a function of the signal magnitude, the effective gain being greater for small rather than for large signals. **b) Video –** The reduction in amplitude gain at one level of a picture signal with respect to the gain at another level of the same signal. Note: The gain referred to in the definition is for a signal amplitude small in comparison with the total peak-to-peak picture signal involved. A quantitative evaluation of this effect can be obtained by a measurement of differential gain. **c) Production –** A transfer function (as in gamma correction) or other nonlinear adjustment imposed upon signal amplitude values.

Compression (Bit Rate) – Used in the digital environment to describe initial digital quantization employing transforms and algorithms encoding data into a representation that requires fewer bits or lower data rates or processing of an existing digital bit stream to convey the intended information in fewer bits or lower data rate. Compression (bit rate) may be reversible compression, lossless or it may be irreversible compression, lossy.

Compression Artifacts – Small errors that result in the decompressed signal when a digital signal is compressed with a high compression ratio. These errors are known as “artifacts”, or unwanted defects. The artifacts may resemble noise (or edge “busyness”) or may cause parts of the picture, particularly fast moving por-tions, to be displayed with the movement distorted or missing.

Compression Factor – Ratio of input bit rate to output (compressed) bit rate. Like Compression Ratio.

Compression Layer – The layer of an ISO/IEC FCD 14496 system that translates between the coded representation of an elementary stream and its decoded representation. It incorporates the media object decoders.

Compression Ratio – A value that indicates by what factor an image file has been reduced after compression. If a 1 MB image file is compressed to 500 KB, the compression ratio would be a factor of 2. The higher the ratio the greater the compression.

Compression, Lossless – Lossless compression requires that the reproduced reconstructed bit stream be an exact replica of the original bit stream. The useful algorithms recognize redundancy and inefficiencies in the encoding and are most effective when designed for the statistical properties of the bit stream. Lossless compression of image signal requires that the decoded images match the source images exactly. Because of differences in the statistical distributions in the bit streams, different techniques have thus been found effective for lossless compression of either arbitrary computer data, pictures, or sound.

Compression, Lossy – Bit-rate reduction of an image signal by powerful algorithms that compress beyond what is achievable in lossless compression, or quasi-lossless compression. It accepts loss of information and introduction of artifacts which can be ignored as unimportant when viewed in direct comparison with the original. Advantage is taken of the subtended viewing angle for the intended display, the perceptual characteristics of human vision, the statistics of image populations, and the objectives of the display. The lost information cannot be regenerated from the compressed bit stream.

Compression, Quasi-Lossless – Bit-rate reduction of an image signal, by an algorithm recognizing the high degree of correlation ascertainable in specific images. The reproduced image does not replicate the original when viewed in direct comparison, but the losses are not obvious or recognizable under the intended display conditions. The algorithm may apply transform coding, predictive techniques, and other modeling of the image signal, plus some form of entrophy encoding. While the image appears unaltered to normal human vision, it may show losses and artifacts when analyzed in other systems (i.e., chroma key, computerized image analysis, etc.). The lost information cannot be regenerated from the compressed bit stream.

Compressionist – One who controls the compression process to produce results better than would be normally expected from an automated system.

Compressor – An analog device that reduces the dynamic range of a signal by either reducing the level of loud signals or increasing the level of soft signals when the combined level of all the frequencies contained in the input is above or below a certain threshold level.

Computer – General purpose computing system incorporating a CPU, memory, I/O facilities, and power supply.

Computer Input – Some HDTV sets have an input (typically SVGA or VGA) that allows the TV set to be connected to a computer.

Computer Television – Name of a Time Inc. pay-TV company that pre-dated HBO; also an unrealized concept created by Paul Klein, the company's founder, that would allow viewers access to a vast selection of television programming with no temporal restrictions, in the same way that telephone subscribers can call any number at any time. B-ISDN might offer the key to the transmission problem of computer television; the random-access library-storage problems remain.

Concatenation – Linking together (of systems). Although the effect on quality resulting from a signal passing through many systems has always been a concern, the use of a series of compressed digital video systems is, as yet, not well known. The matter is complicated by virtually all digital compression systems differing in some way from each other, hence the need to be aware of concatenation. For broadcast, the current NTSC and PAL analog compression systems will, more and more, operate alongside digital MPEG compression systems used for transmission and, possibly, in the studio. Even the same brand and model of encoder may encode the same signal in a different manner. See also Mole Technology.

Concave Lens – A lens that has negative focal length, i.e., the focus is virtual and it reduces the objects.

Condenser Mike – A microphone which converts sound pressure level variations into variations in capacitance and then into electrical voltage.

Condition Code – Refers to a limited group of program conditions, such as carry, borrow, overflow, etc., that are pertinent to the execution of instructions. The codes are contained in a condition code register. Same as Flag Register.

Conditional Access (CA) – This is a technology by which service providers enable subscribers to decode and view content. It consists of key decryption (using a key obtained from changing coded keys periodically sent with the content) and descrambling. The decryption may be proprietary (such as Canal+, DigiCipher, Irdeto Access, Nagravision, NDS, Viaccess, etc.) or standardized, such as the DVB common scrambling algorithm and OpenCable. Conditional access may be thought of as a simple form of digital rights management. Two common DVB conditional access (CA) techniques are SimulCrypt and MultiCrypt. With SimulCrypt, a single transport stream can contain several CA systems. This enables receivers with different CA systems to receive and correctly decode the same video and audio streams. With MultiCrypt, a receiver permits the user to manually switch between CA systems. Thus, when the viewer is presented with a CA system which is not installed in his receiver, they simply switch CA cards.

Conditional Access System – A system to control subscriber access to services, programs and events, e.g., Videoguard, Eurocrypt.

Conditional Jump or Call – Instruction that when reached in a program will cause the computer either to continue with the next instruction in the original sequence or to transfer control to another instruction, depending on a predetermined condition.

Conductive Coatings – Coatings that are specially treated to reduce the coating resistance, and thus prevent the accumulation of static electrical charge. Untreated, non-conductive coatings may become highly charged, causing transport, noise and dust-attraction problems.

Conferencing – The ability to conduct real-time interactive video and/or audio and/or data meetings via communication services over local or wide area networks.

Confidence Test – A test to make sure a particular device (such as the keyboard, mouse, or a drive) is set up and working properly.

Confidence Value – A measurement, expressed as a percentage, of the probability that the pattern the system finds during a motion tracking operation is identical to the pattern for which the system is searching. During a motion tracking operation, Avid Symphony calculates a confidence value for each tracking data point it creates.

CONFIG.SYS – A file that provides the system with information regarding application requirements. This information may include peripherals that are connected and require special drivers (such as a mouse). Other information that might be specified is the number of files that can be open simultaneously, or the number of disk drives that can be accessed.

Configuration File – A system file that you change to customize the way your system behaves. Such files are sometimes referred to as customization files.

Conform – To prepare a complete version of your project for viewing. The version produced might be an intermediate working version or the final cut.

Conforming – The process wherein an offline edited master is used as a guide for performing final edits.

Conforming a Film Negative – The mathematical process that the editing system uses to ensure that the edits made on a videotape version of a film project (30 fps) are frame accurate when they are made to the final film version (24 fps).

Connection-Oriented Protocol – In a packet switching network, a virtual circuit can be formed to emulate a fixed bandwidth switched circuit, for example, ATM. This benefits transmission of media requiring constant delays and bandwidth.

Connector – Hardware at the end of a cable that lets you fasten the cable to an outlet, port, or another connector.

Console – A display that lists the current system information and chronicles recently performed functions. It also contains information about particular items being edited, such as the shots in the sequence or clips selected from bins.

Console Window – The window that appears each time you log in. IRIX reports all status and error messages to this window.

Consolidate – To make copies of media files or portions of media files, and then save them on a drive. The consolidate feature operates differently for master clips, subclips and sequences.

Constant – a) A fixed value. **b)** An option for the interpolation and/or extrapolation of an animation curve that produces a square or stepped curve.

Constant Alpha – A gray scale alpha plane that consists of a constant non-zero value.

Constant Bit Rate (CBR) – a) An operation where the bit rate is constant from start to finish of the compressed bit stream. **b)** A variety of MPEG video compression where the amount of compression does not change. **c)** Traffic that requires guaranteed levels of service and throughput in delay-sensitive applications such as audio and video that are digitized and represented by a continuous bit stream.

Constant Bit Rate Coded Media – A compressed media bitstream with a constant average bit rate. For example, some MPEG video bitstreams.

Constant Bit Rate Coded Video – A compressed video bit stream with a constant average bit rate.

Constant Luminance Principle – A rule of composite color television that any change in color not accompanied by a change in brightness should not have any effect on the brightness of the image displayed on a picture tube. The constant luminance principle is generally violated by existing NTSC encoders and decoders. See also Gamma.

Constant Shading – The simplest shading type is constant. The color of a constant shaded polygon's interior pixels is always the same, regardless of the polygon's orientation with respect to the viewer and light sources. Constant shading is useful for creating light sources, for example. With all other shading types, a polygon changes its shade as it moves.

Constellation Diagram – A display used within digital modulation to determine the health of the system. It consists of a plot of symbol values onto an X-Y display, similar to a vectorscope display. The horizontal axis is known as the In-Phase (I) and the vertical axis is known as the Quadrature Phase (Q) axis. The position of the symbols within the constellation diagram provides information about distortions in the QAM or QPSK modulator as well as about distortions after the transmission of digitally coded signals.

Constrained Parameters – MPEG-1 video term that specifies the values of the set of coding parameters in order to assure a baseline interoperability.

Constrained System Parameter Stream (CSPS) – An MPEG-1 multiplexed system stream to which the constrained parameters are applied.

Constructive Solid Geometry (CSG) – This way of modeling builds a world by combining "primitive" solids such as cubes, spheres, and cones. The operations that combine these primitives are typically union, intersection, and difference. These are called Boolean operations. A CSG database is called a CSG tree. In the tree, branch points indicate the operations that take place on the solids that flow into the branch point.

Content – The program content will consist of the sum total of the essence (video, audio, data, graphics, etc.) and the metadata. Content can include television programming, data and executable software.

Content Object – The object encapsulation of the MPEG-4 decoded representation of audiovisual data.

Content-Based Image Coding – The analysis of an image to recognize the objects of the scene (e.g., a house, a person, a car, a face,...). The objects, once recognized are coded as parameters to a general object model (of the house, person, car, face,...) which is then synthesized (i.e., rendered) by the decoder using computer graphic techniques.

Continuation Indicator (CI) – Indicates the end of an object in the current packet (or continuation).

Continuous Monitoring – The monitoring method that provides continuous real-time monitoring of all transport streams in a network.

Continuous Tone – An image that has all the values (0 to 100%) of gray (black and white) or color in it. A photograph is a continuous tone image.

Contour Enhancement – A general term usually intended to include both aperture correction and edge enhancement.

Contouring – a) Video picture defect due to quantizing at too coarse a level. The visual effect of this defect is that pictures take on a layered look somewhat like a geographical contoured map. **b)** This is an image artifact caused by not having enough bits to represent the image. The reason the effect is called "contouring" is because the image develops vertical bands of brightness.

Contrast – Contrast describes the difference between the white and black levels in a video waveform. If there is a large difference between the white and black picture levels, the image has high contrast. If there is a small difference between the white and black portions of the picture, then the picture has low contrast and takes on a gray appearance.

Contrast Ratio – a) Related to gamma law and is a measurement of the maximum range of light to dark objects that a television system can reproduce. **b)** The comparison of the brightest part of the screen to the darkest part of the screen, expressed as a ratio. The maximum contrast ratio for television production is 30 x 1.

Contribution – A form of signal transmission where the destination is not the ultimate viewer and where processing (such as electronic matting) is likely to be applied to the signal before it reaches the ultimate viewer. Contribution demands higher signal quality than does distribution because of the processing.

Contribution Quality – The level of quality of a television signal from the network to its affiliates. For digital television this is approximately 45 Mbps.

Control Block – Circuits that perform the control functions of the CPU. They are responsible for decoding instructions and then generating the internal control signals that perform the operations requested.

Control Bus – Set of control lines in a computer system. Provides the synchronization and control information necessary to run the system.

Control Channel – A logical channel which carries control messages.

Control Layer – The MPEG-4 Systems Layer that maintains and updates the state of the MPEG-4 Systems Layers according to control messages or user interaction.

Control Menu Box – Located on the upper left corner of all application windows, document windows, and dialog boxes, it sizes (maximize, minimize, or restore) or exits the window.

Control Message – An information unit exchanged to configure or modify the state of the MPEG-4 systems.

Control Point – A location on a Bézier curve that controls its direction. Each control point has two direction handles that can extend from it.

Control Processor Unit/Central Processing Unit (CPU) – a) Circuits used to generate or alter control signals. **b)** A card in the frame which controls overall switcher operation.

Control Program – Sequence of instructions that guide the CPU through the various operations it must perform. This program is stored permanently in ROM where it can be accessed by the CPU during operation. Usually this ROM is located within the microprocessor chip. Same as Microprogram or Microcode.

Control Room – The enclosed room where the electronic control system for radio and television are located and where the director and technical director sit.

Control Signal – A signal used to cause an alteration or transition of video signals.

Control Track – a) The magnetized portion along the length of a videotape on which sync control information is placed. The control track contains a pulse for each video field and is used to synchronize the tape and the video signal. **b)** A synchronizing signal on the edge of the tape which provides a reference for tracking control and tape speed. Control tracks that have heavy dropouts are improperly recorded and may cause tracking defects or picture jumps. **c)** A signal recorded on videotape to allow the tape to play back at a precise speed in any VTR. Analogous to the sprocket holes on film. **d)** A linear track, consisting of 30-or 60-Hz pulses, placed on the bottom of videotape that aids in the proper playback of the video signal.

Control Track Editing – The linear editing of videotape with equipment that reads the control track information to synchronize the editing between two decks. Contrast with Timecode Editing.

Control Track Editor – Type of editing system that uses frame pulses on the videotape control track for reference.

Control-L (LANC)– Sony's wired edit control protocol, also called LANC (Local Application Control), which allows two-way communication between a camcorder or VCR and an edit controller such as the Thumbs Up. Control-L allows the controller to control the deck (fast forward, play, etc.) and also allows the controller to read the tape position (tape counter) information from the deck.

Control-M – Panasonic's wired edit control protocol. Similar to Control-L in function but not compatible. Also called Panasonic 5-pin edit control. See Control-L.

Control-S – Sony wired transport control protocol that duplicates a VCR's infra-red remote transport control (play, stop, pause, fast forward and rewind). Unlike Control-L, Control-S does not allow the controller to read tape counter information.

Control-T – Similar to Control-L but allows multiple units to be controlled. Not used in current equipment.

Conventional Definition Television (CDTV) – This term is used to signify the analog NTSC television system as defined in ITU-R Recommendation 470. See also Standard Definition Television and ITU-R Recommendation 1125.

Convergence – The act of adjusting or the state of having adjusted, the Red, Green and Blue color gun deflection such that the electron beams are all hitting the same color triad at the same time.

Conversion Ratio – The size conversion ratio for the purpose of rate control of shape.

Conversion, Frame-Rate – Standardized image systems now exist in the following frame rates per second: 24, 25, 29.97, 30, and 60. In transcoding from one system to another, frame rate conversion algorithms perform this conversion. The algorithm may be as simple as to drop or add frames or fields, or it may process the information to generate predictive frames employing information from the original sequence. In interlace systems, the algorithm may be applied independently to each field.

Converter – Equipment for changing the frequency of a television signal such as at a cable head-end or at the subscriber's receiver.

Convex Lens – A convex lens has a positive focal length, i.e., the focus is real. It is usually called magnifying glass, since it magnifies the objects.

Convolutional Coding – The data stream to be transmitted via satellite (DVB-S) which is loaded bit by bit into shift registers. The data which is split and delayed as it is shifted through different registers is combined in several paths. This means that double the data rate (two paths) is usually obtained. Puncturing follows to reduce the data rate: the time sequence of the bits is predefined by this coding and is represented by the trellis diagram.

Coordination System – See Reference.

CORBA (Common Object Request Broker Architecture) – A standard defined by the Common Object Group. It is a framework that provides interoperability between objects built in different programming languages, running on different physical machines perhaps on different networks. CORBA specifies an Interface Definition Language, and API (Application Programming Interface) that allows client / server interaction with the ORB (Object Request Broker).

Core – Small magnetic toruses of ferrite that are used to store a bit of information. These can be strung on wires so that large memory arrays can be formed. The main advantage of core memory is that it is nonvolatile.

Core Experiment – Core experiments verify the inclusion of a new technique or set of techniques. At the heart of the core experiment process are multiple, independent, directly comparable experiments, performed to determine whether or not proposed algorithmic techniques have merits. A core experiment must be completely and uniquely defined, so that the results are unambiguous. In addition to the specification of the algorithmic technique(s) to be evaluated, a core experiment also specifies the parameters to be used (for example, audio sample rate or video resolution), so that the results can be compared. A core experiment is proposed by one or more MPEG experts, and it is approved by consensus, provided that two or more independent experts carry out the experiment.

Core Visual Profile – Adds support for coding of arbitrary-shaped and temporally scalable objects to the Simple Visual Profile. It is useful for applications such as those providing relatively simple content interactivity (Internet multimedia applications).

Coring – A system for reducing the noise content of circuits by removing low-amplitude noise riding on the baseline of the signals. Both aperture correction and enhancement can be cored. It involves preventing any boosting of very low level edge transitions. The threshold point is the coring control. The more the coring is increased, the more the extra noise added by the enhanced (or aperture corrector) high frequency boosting is reduced. Of course, the fine detail enhancement is also reduced or eliminated. Too high levels of coring can cause a "plastic picture" effect.

Correlation – A comparison of data which is used to find signals in noise or for pattern recognition. It uses a best-match algorithm which compares the data to the reference.

Co-Sited Sampling – Co-sited sampling ensures that the luminance and the chrominance digital information is simultaneous, minimizing chroma/luma delay. This sampling technique is applied to color difference component video signals: Y, Cr, and Cb. The color difference signals, Cr and Cb, are sampled at a sub-multiple of Y, the luminance frequency – 4:2:2, for example. With co-sited sampling, the two color difference signals are sampled at the same instant, as well as one of the luminance samples.

Co-Siting – Relates to SMPTE 125M component digital video, in which the luminance component (Y) is sampled four times for every two samples of the two chrominance components (Cb and Cr). Co-siting refers to delaying transmission of the Cr component to occur at the same time as the second sample of luminance data. This produces a sampling order as follows: Y1/Cb1, Y2/Cr1, Y3/Cr3, Y4/Cb3 and so on. Co-siting reduces required bus width from 30 bits to 20 bits.

CP_SEC (Copyright Protection System) – In DVD-Video, a 1-bit value stored in the CPR_MAI that indicates if the corresponding sector has implemented a copyright protection system. See Content Scrambling System (CSS).

CPE (Common Phase Error) – Signal distortions that are common to all carriers. This error can (partly) be suppressed by channel estimation using the continual pilots.

CPM (Copyrighted Material) – In DVD-Video, a 1-bit value stored in the CPR_MAI that indicates if the corresponding sector includes any copyrighted material.

CPPM (Content Protection for Prerecorded Media) – Copy protection for DVD-Audio.

CPR_MAI (Copyright Management Information) – In DVD-Video, an extra 6 bytes per sector that includes the Copyright Protection System Type (CPS_TY) and Region Management information (RMA) in the Contents provider section of the Control data block; and Copyrighted Material flag (CPM), Copyright Protection System flag (CP_SEC) and Copy Guard Management System (CGMS) flags in the Data Area.

CPRM (Content Protection for Recordable Media) – Copy protection for writable DVD formats.

CPS – Abbreviation for Characters Per Second.

CPS_TY (Copyright Protection System Type) – In DVD-Video, an 8-bit (1 byte) value stored in the CPR_MAI that defines the type of copyright protection system implemented on a disc.

CPSA (Content Protection System Architecture) – An overall copy protection design for DVD.

CPTWG (Copy Protection Technical Working Group) – The industry body responsible for developing or approving DVD copy protection systems.

CPU – See Central Processing Unit.

CPU Board – The printed circuit board within a workstation chassis that contains the central processing unit(s). When you open the front metal panel of the Indigo chassis, it is the board on the left.

CPV – This is a proprietary and relatively old format designed for 30 fps video over packet based networks. It is still being used in closed video systems where 30 fps is required, such as in security applications.

C_R – Scaled version of the R-Y signal.

Crash Edit – An edit that is electronically unstable, such as one made using the pause control on a deck, or using a non-capstan served deck.

Crash Recording – See Hard Recording.

Crawl – a) Titles that move slowly up the screen, mounted on a revolving drum. **b)** Sideways movement of text across a screen. **c)** An appearance of motion in an image where there should be none. See also Chroma Crawl and Line Crawl.

Crawling Text – Text that moves horizontally over time. Examples include stock and sports score tickers that appear along the bottom of a television screen.

CRC – See Cyclic Redundancy Check.

Crease – A tape deformity which may cause horizontal or vertical lines in the playback picture. See Wrinkle.

Credits – Listing of actors, singers, directors, etc., in title preceding or directly following the program.

Creepy-Crawlies – Yes, this is a real video term! Creepy-crawlies refers to a specific image artifact that is a result of the NTSC system. When the nightly news is on, and a little box containing a picture appears over the anchorperson's shoulder, or when some computer-generated text shows up on top of the video clip being shown, get up close to the TV and check it out. Along the edges of the box, or along the edges of the text, you'll notice some jaggies "rolling" up (or down) the picture. That is the creepy-crawlies. Some people refer to this as zipper because it looks like one.

Crispening – A means of increasing picture sharpness by generating and applying a second time derivative of the original signal.

Critical Band – Frequency band of selectivity of the human ear which is a psychoacoustic measure in the spectral domain. Units of the critical band rate scale are expressed as Barks.

Crop – Term used for the action of moving left, right, top and bottom boundaries of a key. See Trim.

Crop Box – A box that is superimposed over frames, either automatically or manually, to limit color corrections, key setups, etc., to the area inside the box.

Cropping – A digital process which removes areas of a picture (frame) by replacing video pixels with opaque pixels of background colors. Cropping may be used to eliminate unwanted picture areas such as edges or as quasi-masking in preparation for keying.

Cross Color – Spurious signal resulting from high-frequency luminance information being interpreted as color information in decoding a composite signal. Typical video examples are "rainbow" on venetian blinds and striped shirts.

Cross Luma – This occurs when the video decoder incorrectly interprets chroma information (color) to be high-frequency luma information (brightness).

Cross Luminance – Spurious signals occurring in the Y channel as a result of composite chroma signals being interpreted as luminance, such as "dot crawl" or "busy edges" on colored areas.

Cross Mod – A test method for determining the optimum print requirements for a variable area sound track.

Cross Modulation – See Chrominance-to-Luminance Intermodulation.

Cross-Assembler – Assembler that runs on a processor whose assembly language is different from the language being assembled.

Cross-Color – An artifact observed in composite systems employing quadrature modulation and frequency interleaving. Cross-color results from the multiplicities of line-scan harmonics in the baseband signal, which provide families of frequencies surrounding each of the main harmonic peaks. These families become even more complex if there is movement in the scene luminance signals between scans. Since the interstices are, therefore, not completely empty, some of the information on the luminance signal is subsequently decoded as color information. A typical visible effect is a moiré pattern.

Crossfade – The audio equivalent of the video dissolve where one sound track is gradually faded out while a second sound track simultaneously replaces the original one. See Mix.

Crosshatch – A test pattern consisting of vertical and horizontal lines used for converging color monitors and cameras.

Cross-Luminance – An artifact observed in composite systems employing quadrature modulation and frequency interleaving. As the analog of cross-color, cross luminance results in some of the information carried by the chrominance signal (on color subcarrier) being subsequently interpreted as fine detail luminance information. A typical visible effect is chroma crawl and visible subcarrier.

Cross-Luminance Artifacts – Introduced in the S-VHS concept for a better luminance resolution.

Crossover Network – A device which divides a signal into two or more frequency bands before low frequency outputs of a crossover network. The level of each output at this frequency is 3 dB down from the flat section of the crossover's frequency response curve.

Cross-Play – By cross-play capability is meant the ability to record and reproduce on the same or a different machine; record at one speed and reproduce at the same or a different speed; accomplish the foregoing singly or in any combination without readjustment for tape or transport type.

Crosspoint – a) The electronic circuit used to switch video, usually on a bus. **b)** An electronic switch, usually controlled by a push-button on the panel, or remotely by computer that allows video or audio to pass when the switch is closed.

Cross-Sectional Modeling – This type of modeling is also a boundary representation method available in PictureMaker. The artist can define an object's cross-section, and then extrude in the longitudinal direction after selecting an outline to define the cross-section's changes in scale as it traverses the longitudinal axis.

Crosstalk – The interference between two audio or two video signals caused by unwanted stray signals. **a)** In video, crosstalk between input channels can be classified into two basic categories: luminance/sync crosstalk; and color (chroma) crosstalk. When video crosstalk is too high, ghost images from one source appear over the other. **b)** In audio, signal leakage, typically between left and right channels or between different inputs, can be caused by poor grounding connections or improperly shielded cables. See Chrominance-to-Luminance Intermodulation.

Crosstalk Noise – The signal-to-crosstalk noise ratio is the ratio, in decibels, of the nominal amplitude of the luminance signal (100 IRE units) to the peak-to-peak amplitude of the interfering waveform.

CRT (Cathode Ray Tube) – There are three forms of display CRTs in color television: tri-color (a color picture tube), monochrome (black and white), and single color (red, green, or blue, used in projection television systems). Many widescreen ATV schemes would require a different shape CRT, particularly for direct-view systems.

CRT Terminal – Computer terminal using a CRT display and a keyboard, usually connected to the computer by a serial link.

Crushing the Blacks – The reduction of detail in the black regions of a film or video image by compressing the lower end of the contrast range.

CS (Carrier Suppression) – This is the result of an unwanted coherent signal added to the center carrier of the COFDM signal. It could be produced from the DC offset voltages or crosstalk.

CSA (Common Scrambling Algorithm) – Scrambling algorithm specified by DVB. The Common Scrambling Algorithm was designed to minimize the likelihood of piracy attack over a long period of time. By using the Common Scrambling Algorithm system in conjunction with the standard MPEG2 Transport Stream and selection mechanisms, it is possible to incorporate in a transmission the means to carry multiple messages which all enable control of the same scrambled broadcast but are generated by a number of Conditional Access Systems.

CSC (Computer Support Collaboration) – Describes computers that enhance productivity for people working in groups. Application examples include video conferencing, video mail, and shared workspaces.

CSDI – See Compressed Serial Digital Interface.

CSELT (Centro Studi e Laboratori Telecomunicazioni S.p.A.) – CSELT situated in Torino, Italy, is the research company owned by STET (Societa Finanziaria Telefonica per Azioni), the largest telecommunications company in Italy. CSELT has contributed to standards under ITU, ISO and ETSI and has participated in various research programs. In order to influence the production of standards, CSELT participates in groups such as DAVIC, the ATM Forum, and in the Network Management Forum.

CSG (Constructive Solid Geometry) – In CSG, solid objects are represented as Boolean combinations (union, intersection and difference) of solids.

CS-Mount – A newer standard for lens mounting. It uses the same physical thread as the C-mount, but the back flange-to-CCD distance is reduced to 12.5 mm in order to have the lenses made smaller, more compact and less expensive. CS-mount lenses can only be used on CS-mount cameras.

CSPS – See Constrained System Parameter Stream.

CSS (Content Scrambling System) – A type of digital copy protection sanctioned by the DVD forum.

CS-to-C-Mount Adaptor – An adaptor used to convert a CS-mount camera to C-mount to accommodate a C-mount lens. It looks like a ring 5 mm thick, with a male thread on one side and a female on the other, with 1" diameter and 32 threads/inch. It usually comes packaged with the newer type (CS-mount) of cameras.

CSV (Comma Separated Variables) – Commonly used no-frills text file format used for import from and import to spreadsheets and SQL databases.

CTA (Cordless Terminal Adapter) – Provides the interface between the subscriber line on a hook-up site and the DBS (Direct Broadcast Satellite). The CTA offers subscribers a range of services equivalent or better quality than a wired connection. The CTA offers the option of more advanced services, such as high-speed V.90 Internet access, and thus provide a supplementary income source.

Cue – a) An editing term meaning to bring all source and record VTRs to the predetermined edit point plus pre-roll time. **b)** An audio mixer function that allows the user to hear an audio source (usually through headphones) without selecting that source for broadcast/recording; the audio counterpart of a preview monitor. **c)** The act of rewinding and/or fast-forwarding a video- or audiotape so that the desired section is ready for play.

Cue Channel – A dedicated track for sync pulses or timecode.

Cue Control – A switch that temporarily disables a recorder's Tape Lifters during fast forward and rewind so the operator can judge what portion of the recording is passing the heads.

Cue Mark – Marks used to indicate frames of interest on a clip.

Cupping – Curvature of a tape in the lateral direction. Cupping may occur because of improper drying or curing of the coating or because of differences between the coefficients of thermal or hygroscopic expansion of coating and base film.

Curl – A defect of a photographic film consisting of unflatness in a plane cutting across the width of the film. Curl may result from improper drying conditions, and the direction and amount of curl may vary with the humidity of the air to which the film is exposed.

Current – The flow of electrons.

Current Tracer – Handheld troubleshooting tool used to detect current flow in logic circuits.

Current Working Directory – The directory within the file system in which you are currently located when you are working in a shell window.

Cursor – a) The small arrow on the screen that echoes the movements of the mouse. It changes shape depending on its location on the screen. **b)** An indicator on a screen that can be moved to highlight a particular function or control which is the current parameter now under adjustment or selected.

Curvature Error – A change in track shape that results in a bowed or S-shaped track. This becomes a problem if the playback head is not able to follow the track closely enough to capture the information.

Curve – A single continuous line with continuity of tangent vector and of curvature. It is defined by its type, degree, and rational feature.

Curves Graph – An X, Y graph that plots input color values on the horizontal axis and output color values on the vertical axis. Used in the Color Correction Tool as a control for changing the relationship between input and output color values.

Cusp – Breakpoints on curves.

Cut – a) The immediate switching from one video source to another during the vertical blanking interval. The visual effect is an abrupt change from one picture to another. **b)** The nearly instantaneous switch from one picture to another at the on-air output of the switcher. The switcher circuitry allows cuts only during the vertical interval of the video signal so as to prevent disruption of the picture. On the Vista, the Cut push-button in the Effects Transition control group activates an effects cut. The DSK Cut Key-In push-button cuts the downstream key on or off air. On AVCs, this is performed by a zero time auto transition.

Cut List – A series of output lists containing specifications used to conform the film work print or negative. See also Dupe List.

Cut-Off Frequency – That frequency beyond which no appreciable energy is transmitted. It may refer to either an upper or lower limit of a frequency band.

Cutout – See Matte.

Cuts Only – Transition limited to on/off or instantaneous transition-type edits; a basic editing process with limited capabilities.

Cutting – The selection and assembly of the various scenes or sequences of a reel of film.

Cutting Head – A transducer used to convert electrical signals into hills and valleys in the sides of record grooves.

CVBS (Color Video Blanking and Sync) – Another term for Composite Video.

CVBS (Composite Video Baseband Signal)

CVBS (Composite Video, Blanking, Synchronization)

CVBS (Composite Video Bar Signal) – In broadcast television, this refers to the video signal, including the color information and syncs.

CVC – See Compatible Video Consortium.

CVCT – See Cable Virtual Channel Table.

CW (Continuous Wave) – Refers to a separate subcarrier sine wave used for synchronization of the chrominance information.

CX Noise Reduction – This is a level sensitive audio noise reduction scheme that involves compression, on the encode side, and expansion, on the decode side. It was originally developed for CBS for noise reduction on LP records and is a trademark of CBS, Inc. The noise reduction obtained by CX was to be better than Dolby B3 for tape, but remain unnoticeable in playback if decoding didn't take place. A modified CX system was applied to the analog audio tracks for the laserdisc to compensate for interference between the audio and video carriers. The original CX system for LP records was never implemented.

Cycle – An alternation of a waveform which begins at a point, passes through the zero line and ends at a point with the same value and moving in the same direction as the starting point.

Cycle Per Second – A measure of frequency, equivalent to Hertz.

Cycle Time – Total time required by a memory device to complete a read or write cycle and become available again.

Cyclic Redundancy Check (CRC) – a) Used to generate check information on blocks of data. Similar to a checksum, but is harder to generate and more reliable. **b)** Used in data transfer to check if the data has been corrupted. It is a check value calculated for a data stream by feeding it through a shifter with feedback terms "EXORed" back in. A CRC can detect errors but not repair them, unlike an ECC, which is attached to almost any burst of data that might possibly be corrupted. CRCs are used on disks, ITU-R 601 data, Ethernet packets, etc. **c)** Error detection using a parity check.

▶ D

D/I (Drop and Insert) – A point in the transmission where portions of the digital signal can be dropped out and/or inserted.

D1 – A non-compressed component digital video recording format that uses data conforming to the ITU-R BT.601-2 standard. Records on high end 19 mm (3/4") magnetic tape recorders. Systems manufactured by Sony and BTS. Most models can record 525, 625, ITU-R BT.601-2 and SMPTE 125M. The D1 designation is often used in-correctly to indicate component digital video.

D16 – A format to store film resolution images on D1 format tape recorders. Records one film frame in the space normally used for 16 video frames.

D2 – A non-compressed composite digital video record-ing format originally developed by Ampex that uses data conforming to SMPTE 244M and four 20 bit audio channels. Records on high end 19 mm (3/4") magnetic tape recorders. It uses the same tape cassette cartridge but the tape itself is metal particle tape like Beta SP and MII. The D2 designation is often used incorrectly to indicate composite digital video.

D2-MAC – Similar to D-MAC, the form preferred by manufacturers for European DBS. See also MAC.

D3 – A non-compressed composite digital video record-ing format that uses data conforming to SMPTE 244M and four 20 bit audio channels. Records on high end 1/2" magnetic tape similar to M-II. The format was developed by Matsushita and Panasonic.

D4 – A format designation never utilized due to the fact that the number four is considered unlucky (being synonymous with death in some Asian languages).

D5 – A non-compressed, 10 bit 270 Mbit/second, component or composite digital video recording format developed by Matsushita and Panasonic. It is compatible with 360 Mbit/second systems. It records on high end 1/2" magnetic tape recorders.

D6 – A digital tape format which uses a 19 mm helical-scan cassette tape to record uncompressed high definition television material at 1.88 GBps (1.2 Gbps).

D7 – DVCPRO. Panasonic's development of native DV component format.

D8 – There is no D8, nor will there be. The Television Recording and Reproduction Technology Committee of SMPTE decided to skip D8 because of the possibility of confusion with similarly named digital audio and data recorders.

D9 – Digital-S. A 1/2-inch digital tape format developed by JVC which uses a high-density metal particle tape running at 57.8 mm/s to record a video data rate of 50 Mbps.

DA-88 – A Tascam-brand eight track digital audio tape machine using the 8 mm video format of Sony. It has become the defacto standard for audio post production though there are numerous other formats, ranging from swappable hard drives to analog tape formats and everything in between.

DAB – See Digital Audio Broadcasting.

DAC (Digital-to-Analog Converter) – A device in which signals having a few (usually two) defined levels or states (digital) are converted into signals having a theoretically infinite number of states (analog).

DAC to DAC Skew – The difference in a full scale transition between R, B and B DAC outputs measured at the 50% transition point. Skew is measured in tenths of nanoseconds.

DAE (Digidesign Audio Engine) – A trademark of Avid Technology, Inc. The application that manages the AudioSuite plug-ins.

DAE (Digital Audio Extraction) – Reading digital audio data directly from a CD audio disc.

DAI (DMIF Application Interface) – The bridge between DMIF (delivery multimedia integration framework) and MPEG-4 systems.

Dailies – a) The first positive prints made by the laboratory from the negative photographed on the previous day. **b)** Film prints or video transfers of recently shot film material, prepared quickly so that production personnel can view and evaluate the previous day's shooting before proceeding. Also called Rushes, primarily in the United Kingdom.

Daisy Chain – Bus line that is interconnected with units so that the signal passes from one unit to the next in serial fashion.

DAM (DECT Authentication Module) – a) An IC card used for cordless telecommunications. **b)** A smart card that makes billing more secure and prevents fraud. The DAM is reminiscent of the subscriber identity module (SIM) card in the GSM standard.

Damped Oscillation – Oscillation which, because the driving force has been removed, gradually dies out, each swing being smaller than the preceding in smooth regular decay.

Dark Current – Leakage signal from a CCD sensor in the absence of incident light.

Dark Noise – Noise caused by the random (quantum) nature of the dark current.

DAT (Digital Audio Tape) – a) A consumer digital audio recording and playback system developed by Sony, with a signal quality capability surpassing that of the CD. b) A magnetic tape from which you can read and to which you can copy audio and digital information.

Data – General term denoting any or all facts, numbers, letters, and symbols or facts that refer to or describe an object, idea, condition, situation or other factors. Connotes basic elements of information that can be processed or produced by a computer. Sometimes data is considered to be expressible only in numerical form, but information is not so limited.

Data Acquisition – Collection of data from external sensors usually in analog form.

Data Area – The physical area of a DVD disc between the lead in and the lead out (or middle area) which contains the stored data content of the disc.

Data Base – Systematic organization of data files for easy access, retrieval, and updating.

Data Bus – Set of lines carrying data. The data bus is usually bidirectional and three-state.

Data Carousels – The data broadcast specification for data carousels supports data broadcast services that require the periodic transmission of data modules through DVB compliant broadcast networks. The modules are of known sizes and may be updated, added to, or removed from the data carousel in time. Modules can be clustered into a group of modules if required by the service. Likewise, groups can in turn be clustered into SuperGroups. Data broadcast according to the data carousel specification is transmitted in a DSM-CC data carousel which is defined in MPEG-2 DSM-CC. This specification defines additional structures and descriptors to be used in DV compliant networks. The method is such that no explicit references are made to PIDs and timing parameters enabling preparation of the content off-line.

Data Circuit-Terminating Equipment (DCE) – Equipment at a node or access point of a network that interfaces between the data terminal equipment (DTE) and the channel. For example, a modem.

Data Compression – Application of an algorithm to reduce the bit rate of a digital signal, or the bandwidth of an analog signal while preserving as much as possible of the information usually with the objective of meeting the constraints in subsequent portions of the system.

Data Conferencing – Sharing of computer data by remote participants by application sharing or shared white board technologies.

Data Domain – Analysis or display of signals in which only their digital value is considered and not their precise voltage or timing. A logic state analyzer displays information in the data domain.

Data Element – An item of data as represented before encoding and after decoding.

Data Encryption Standard (DES) – A national standard used in the U.S. for the encryption of digital information using keys. It provides privacy protection but not security protection.

Data Essence – a) Essence that is distinguished as different from video or audio essence. Digital data that may stand alone or may be associated with video or audio essence or metadata. **b)** Refers to the bits and bytes of new forms of content, such as interactive TV-specific content, Advanced Television Enhancement Forum (ATVEF) content (SMPTE 363M), closed captions.

Data Partitioning – A method for dividing a bit stream into two separate bit streams for error resilience purposes. The two bit streams have to be recombined before decoding.

Data Piping – The data broadcast specification profile for data pipes supports data broadcast services that require a simple, asynchronous, end-to-end delivery of data through DVB compliant broadcast networks. Data broadcast according to the data pipe specification is carried directly in the payloads of MPEG-2 TS packets.

Data Rate – The speed at which digital information is transmitted, typically expressed in hertz (Hz), bits/second (b/s), or bytes/sec (B/s). The higher the data rate of your video capture, the lower the compression and the higher the video quality. The higher the data rate, the faster your hard drives must be. Also called throughput.

Data Reduction – The process of reducing the number of recorded or transmitted digital data samples through the exclusion of redundant or unessential samples. Also referred to as Data Compression.

Data Search Information (DSI) – These packets are part of the 1.00 Mbit/sec overhead in video applications. These packets contain navigation information for searching and seamless playback of the Video Object Unit (VOBU). The most important field in this packet is the sector address. This shows where the first reference frame of the video object begins. Advanced angle change and presentation timing are included to assist seamless playback. They are removed before entering the MPEG systems buffer, also known as the System Target Decoder (STD).

Data Set – A group of two or more data essence or metadata elements that are pre-defined in the relevant data essence standard or Dynamic Metadata Dictionary and are grouped together under one UL Data Key. Set members are not guaranteed to exist or be in any order.

Data Streaming – The data broadcast, specification profile for data streaming supports data broadcast services that require a streaming-oriented, end-to-end delivery of data in either an asynchronous, synchronous or synchronized way through DVB compliant broadcast networks. Data broadcast according to the data streaming specification is carried in Program Elementary Stream (PES) packets which are defined in MPEG-2 systems. See Asynchronous Data Streaming, Synchronous Data Streaming.

Data Terminal Equipment (DTE) – A device that controls data flowing to or from a computer. The term is most often used in reference to serial communications defined by the RS-232C standard.

Datacasting – Digital television allows for the transmission of not only digital sound and images, but also digital data (text, graphics, maps, services, etc.). This aspect of DTV is the least developed; but in the near future, applications will likely include interactive program guides, sports statistics, stock quotes, retail ordering information, and the like. Datacasting is not two-way, although most industry experts expect that set-top box manufacturers will create methods for interaction. By integrating dial-up Internet connections with the technology, simple responses will be possible using a modem and either an add-on keyboard or the set-tops remote control.

DATV (Digitally Assisted Television) – An ATV scheme first proposed in Britain.

DAVIC (Digital Audio Visual Council) – Facing a need to make a multitude of audio/visual technologies and network protocols interoperate, DAVIC was formed in 1993 by Dr. Leonardo Chiariglione, convenor of the MPEG. The purpose of DAVIC is to provide specifications of open interfaces and protocols to maximize interoperability in digital audio/visual applications and services. Thus, DAVIC operates as an extension of technology development centers, such as MPEG.

dB (Decibel) – a) dB is a standard unit for expressing changes in relative power. Variations of this formula describe power changes in terms of voltage or current. dB = 10log10 (P1/P2). **b)** A logarithmic ratio of two signals or values, usually refers to power, but also voltage and current. When power is calculated the logarithm is multiplied by 10, while for current and voltage by 20.

dBFS (Decibel Full Scale)

dBm – dBm is a special case of dB where P2 in the dB formula is equal to 1 mW. See dB.

DBN – See Data Block Number.

DBS – See Direct Broadcast Satellite.

dBw – Refer to the definition of dB. dBw is a special case of dB where P2 in the dB formula is equal to 1 watt.

DC Coefficient – The DCT coefficient for which the frequency is zero in both dimensions.

DC Coupled – A connection configured so that both the signal (AC component) and the constant voltage on which it is riding (DC component) are passed through.

DC Erasure – See Erasure.

DC Noise – The noise arising when reproducing a tape which has been non-uniformly magnetized by energizing the record head with DC, either in the presence or absence of bias. This noise has pronounced long wavelength components which can be as much as 20 dB higher than those obtained from a bulk erased tape. At very high values of DC, the DC noise approaches the saturation noise.

DC Restoration – The correct blanking level for a video signal is zero volts. When a video signal is AC-coupled between stages, it loses its DC reference. A DC restoration circuit clamps the blanking at a fixed level. If set properly, this level is zero volts.

DC Restore – DC restore is the process in which a video waveform has its sync tips or backporch set to some known DC voltage level after it has been AC coupled.

DC Restorer – A circuit used in picture monitors and waveform monitors to clamp one point of the waveform to a fixed DC level.

DC Servo Motor – A motor, the speed of which is determined by the DC voltage applied to it and has provision for sensing its own speed and applying correcting voltages to keep it running at a certain speed.

DC30 Editing Mode – An edit mode in Premiere – specifically for DC30 users – that allows video to be streamed out of the DC30 capture card installed in a computer running Windows.

DCAM (Digital Camera) – Captures images (still or motion) digitally and does not require analog-to-digital conversion before the image can be transmitted or stored in a computer. The analog-to-digital conversion process (which takes place in CODECs) usually causes some degradation of the image, and a time delay in transmission. Avoiding this step theoretically provides a better, faster image at the receiving end.

DCC (Digital Compact Cassette) – A consumer format from Philips using PASC audio coding.

DCE (Data Communication Equipment) – Devices and connections of a communications network that comprise the network end of the user-to-network interface. The DCE provides a physical connection to the network, forwards traffic, and provides a clocking signal used to synchronize data transmission between DCE and DTE devices. Modems and interface cards are examples of DCE.

DCI (Display Control Interface) – A software layer that provides direct control of the display system to an application or client. The display vendor provides information to the system (in addition to the display driver) that allows DCI to offer a generic interface to a client.

DCT – See Discrete Cosine Transform.

DCT Coefficient – The amplitude of a specific cosine basis function.

DCT Recording Format – Proprietary recording format developed by Ampex that uses a 19 mm (3/4") recording cassette. Records ITU-R BT.601-2 and SMPTE 125M data with a 2:1 compression.

DCT-1/IDCT (Inverse Discrete Cosine Transform) – A step in the MPEG decoding process to convert data from temporal back to spatial domain.

DD (Direct Draw) – A Windows 95 version of DCI. See DCI.

DD2 – Data recorders that have been developed using D2 tape offer relatively vast storage of image or other data. Various data transfer rates are available for different computer interfaces. Other computer storage media editing is difficult and images are not directly viewable.

DDB (Download Data Block)

DDC (Data Download Control)

DDC2B – A serial control interface standard used to operate control registers in picture monitors and video chips. The two-wire system is defined by data and clock signals.

DDP (Disc Description Protocol) – A file or group of files which describe how to master a data image file for optical disc (DVD or CD). This is an ANSI industry standard developed by Doug Carson and Associates. The laser beam recorders use this information in the mastering process.

DDR (Digital Disk Recorder) – See Digital Disk Recorder.

DDS (Digital Data Service) – The class of service offered by telecommunications companies for transmitting digital data as opposed to voice.

Debouncing – Elimination of the bounce signals characteristic of mechanical switches. Debouncing can be performed by either hardware or software.

Debugger – A program designed to facilitate software debugging. In general, it provides breakpoints, dump facilities, and the ability to examine and modify registers and memory.

Decay – a) The length of time it takes for an audio signal to fall below the noise threshold. **b)** The adjustable length of time it takes for an ADO DigiTrail effect to complete. (The trail catches up with the primary video.)

Decay Time – The time it takes for a signal to decrease to one-millionth of its original value (60 dB down from its original level).

Decibel – One-tenth of a Bel. It is a relative measure of signal or sound intensity or "volume". It expresses the ratio of one intensity to another. One dB is about the smallest change in sound volume that the human ear can detect. (Can also express voltage and power ratios logarithmically.) Used to define the ratio of two powers, voltages, or currents. See the definitions of dB, dBm and dBw.

Decimation – Term used to describe the process by which an image file is reduced by throwing away sampled points. If an image array consisted of 100 samples on the X axis and 100 samples on the Y axis, and every other sample where thrown away, the image file is decimated by a factor of 2 and the size of the file is reduced by 1/4. If only one sample out of every four is saved, the decimation factor is 4 and the file size is 1/16 of the original. Decimation is a low cost way of compressing video files and is found in many low cost systems. Decimation however introduces many artifacts that are unacceptable in higher cost systems.

Decimation Filter – The Decimation Filter is designed to provide decimation without the severe artifacts associated with throwing data away although artifacts still exist. (See the definition of Decimation.) The Decimation Filter process still throws data away but reduces image artifacts by smoothing out the voltage steps between sampled points.

Deck Controller – A tool that allows the user to control a deck using standard functions such as shuttle, play, fast forward, rewind, stop and eject.

Deck, Tape – A tape recorder that does not include power amplifiers or speakers.

Decode – a) To separate a composite video signal into its component parts. **b)** To reconstruct information (data) by performing the inverse (reverse) functions of the encode process.

Decoded Audiovisual Object – See Decompressed Audiovisual Objects.

Decoded Representation – The intermediate representation of AV objects that is output from decoding and input to compositing. It is independent of the particular formats used for transmitting or presenting this same data. It is suitable for processing or compositing without the need to revert to a presentable format (such as bit map).

Decoded Stream – The decoded reconstruction of a compressed bit stream.

Decoder – a) Device used to recover the component signals from a composite (encoded) source. Decoders are used in displays and in various processing hardware where components signals are required from a composite source such as composite chroma keying or color correction equipment. **b)** Device that changes NTSC signals into component signals; sometimes devices that change digital signals to analog (see DAC). All color TV sets must include an NTSC decoder. Because sets are so inexpensive, such decoders are often quite rudimentary. **c)** An embodiment of a decoding process.

Decoder Buffer (DB) – A buffer at the input of a media object decoder that contains access units.

Decoder Configuration – The configuration of a media object decoder for processing its elementary stream data by using information contained in its elementary stream descriptor.

Decoder Input Buffer – The first-in first-out (FIFO) buffer specified in the video buffering verifier.

Decoder Input Rate – The data rate specified in the video buffering verifier and encoded in the coded video bit stream.

Decoding (Process) – a) The process that reads an input coded bit stream and produces decoded pictures or audio samples. **b)** Converting semantic entities related to coded representation of individual audiovisual objects into their decoded representation. Decoding is performed by calling the public method decode of the audiovisual object.

Decoding Buffer (DB) – A buffer at the input of a media object decoder that contains access units.

Decoding Layer – The MPEG-4 Systems Layer that encompass the Syntactic Decoding Layer and the Decompression Layer and performs the Decoding Process.

Decoding Script – The description of the decoding procedure (including calls to specific decoding tools).

Decoding Time Stamp (DTS) – A field that may be present in a PES packet header that indicates the time that an access unit is decoded in the system target decoder.

Decompose – To create new, shorter master clips based on only the material you have edited and included in your sequence.

Decompress – The process of converting video and audio data from its compact form back into its original form in order to play it. Compare Compress.

Decompressed Audiovisual Object (Decompressed AV Object) – The representation of the audiovisual object that is optimized for the needs of the Composition Layer and the Rendering Layer as is goes out of the Decompression Layer.

Decompression Layer – The MPEG-4 Systems Layer that converts semantic entities from Syntactic Decoded Audiovisual Objects into their decompressed representation (Decompressed Audiovisual Objects).

Decrement – Programming instruction that decreases the contents of a storage location.

Decryption – The process of unscrambling signals for reception and playback by authorized parties. The reverse process of encryption.

DECT (Digital Enhanced Cordless Telecommunications) – A cordless phone standard widely used in Europe. Based on TDMA and the 1.8 and 1.9 GHz bands, it uses Dynamic Channel Selection/Dynamic Channel Allocation (DCS/DCA) to enable multiple DECT users to coexist on the same frequency. DECT provides data links up to 522 kbps with 2 Mbps expected in the future. Using dual-mode handsets, DECT is expected to coexist with GSM, which is the standard cell phone system in Europe.

Dedicated – Set apart for some special use. A dedicated microprocessor is one that has been specially programmed for a single application such as weight measurement, traffic light control, etc. ROMs by their very nature are dedicated memories.

Dedicated Keyboard – A keyboard assigned to a specific purpose.

Deemphasis – Also known as postemphasis and post-equalization. Deemphasis modifies the frequency-response characteristic of the signal in a way that is complementary to that introduced by preemphasis.

Deemphasis Network – Circuit that restores the preemphasized frequency response to its original levels.

Deesser – A compressor which reduces sibilance by triggering compression when it senses the presence of high frequency signals above the compression threshold.

Default – The setup condition (for example, transition rate settings, color of the matte gens, push-button status) existing when a device is first powered-up, before you make any changes.

Default Printer – The printer to which the system directs a print request if you do not specify a printer when you make the request. You set the default printer using the Print Manager.

Defaults – A set of behaviors specified on every system. You can later change these specifications which range from how your screen looks to what type of drive you want to use to install new software.

Defect – For tape, an imperfection in the tape leading to a variation in output or a dropout. The most common defects take the form of surface projections, consisting of oxide agglomerates, imbedded foreign matter, or redeposited wear products.

Definition – The aggregate of fine details available on-screen. The higher the image definition, the greater the number of details that can be discerned. During video recording and subsequent playback, several factors can conspire to cause a loss of definition. Among these are the limited frequency response of magnetic tapes and signal losses associated with electronic circuitry employed in the recording process. These losses occur because fine details appear in the highest frequency region of a video signal and this portion is usually the first casualty of signal degradation. Each additional generation of a videotape results in fewer and fewer fine details as losses are accumulated.

Degauss – To demagnetize (erase) all recorded material on a magnetic videotape, an audiotape or the screen of a color monitor.

Degaussing – A process by which a unidirectional magnetic field is removed from such transport parts as heads and guides. The presence of such a field causes noise and a loss of high frequencies.

Degenerate – Being simpler mathematically than the typical case. A degenerate edge is reduced to one point. A degenerate polygon has a null surface.

Degree – An indication of the complexity of a curve.

Deinterlace – Separation of field 1 and field 2 in a source clip, producing a new clip twice as long as the original.

Del Ray Group – Proponent of the HD-NTSC ATV scheme.

Delay – a) The time required for a signal to pass through a device or conductor. **b)** The time it takes for any circuitry or equipment to process a signal when referenced to the input or some fixed reference (i.e., house sync). Common usage is total delay through a switcher or encoder. **c)** The amount of time between input of the first pixel of a particular picture by the encoder and the time it exits the decoder, excluding the actual time in the communication channel. It is the combined processing time of the encoder and decoder. For face-to-face or interactive applications, the delay is crucial. It usually is required to be less than 200 milliseconds for one-way communication.

Delay Correction – When an electronic signal travels through electronic circuitry or even through long coaxial cable runs, delay problems may occur. This is manifested as a displaced image and special electronic circuitry is needed to correct it.

Delay Distortion – Distortion resulting from non-uniform speed of transmission of the various frequency components of a signal; i.e., the various frequency components of the signal have different times of travel (delay) between the input and the output of a circuit.

Delay Distribution Amplifier – An amplifier that can introduce adjustable delay in a video signal path.

Delay Line – An artificial or real transmission line or equivalent device designed to delay a wave or signal for a specific length of time.

Delete – Edit term to remove.

Delivery – Getting television signals to a viewer. Delivery might be physical (e.g., cassette or disc) or electronic (e.g., broadcast, CATV, DBS, optical fiber).

Delivery System – The physical medium by which one or more multiplexes are transmitted, e.g., satellite system, wideband coaxial cable, fiber optics, terrestrial channel of one emitting point.

Delta Frame – Contains only the data that has changed since the last frame. Delta frames are an efficient means of compressing image data. Compare Key Frame.

Demodulation – The process of recovering the intelligence from a modulated carrier.

Demodulator – a) A device which recovers the original signal after it has been modulated with a high frequency carrier. In television, it may refer to an instrument which takes video in its transmitted form (modulated picture carrier) and converts it to baseband; the circuits which recover R-Y and B-Y from the composite signal. **b)** A device that strips the video and audio signals from the carrier frequency.

Demultiplexer (Demux) – A device used to separate two or more signals that were previously combined by a compatible multiplexer and transmitted over a single channel.

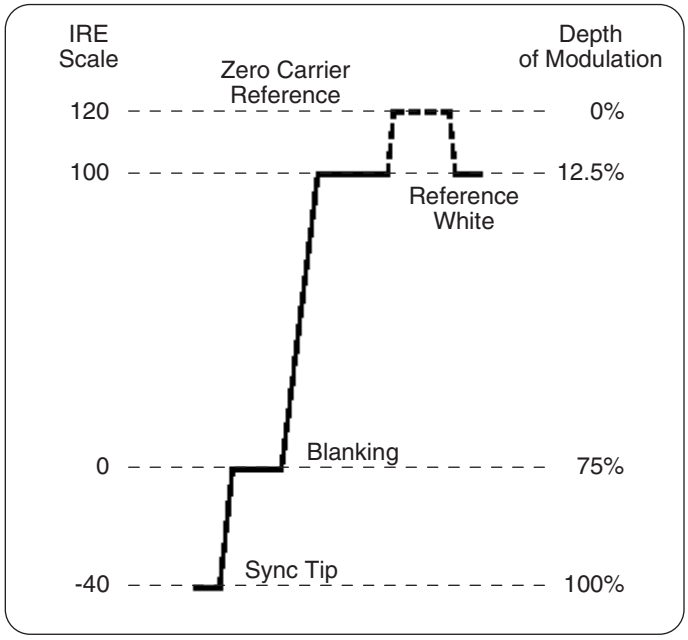
Demultiplexing – Separating elementary streams or individual channels of data from a single multi-channel stream. For example, video and audio streams must be demultiplexed before they are decoded. This is true for multiplexed digital television transmissions.

Density – a) The degree of darkness of an image. **b)** The percent of screen used in an image. c) The negative logarithm to the base ten of the transmittance (or reflectance) of the sample. A sample which transmits 1/2 of the incident light has a transmittance of 0.50 or 50% and a density of 0.30.

Depth Cueing – Varies the intensity of shaded surfaces as a function of distance from the eye.

Depth of Field – a) The range of objects in front of a camera lens which are in focus. Smaller F-stops provide greater depth of field, i.e., more of the scene, near to far, will be in focus. **b)** The area in front of and behind the object in focus that appears sharp on the screen. The depth of field increases with the decrease of the focal length, i.e., the shorter the focal length the wider the depth of field. The depth of field is always wider behind the objects in focus.

Depth of Modulation – This measurement indicates whether or not video signal levels are properly represented in the RF signal. The NTSC modulation scheme yields an RF signal that reaches its maximum peak-to-peak amplitude at sync tip (100%). In a properly adjusted signal, blanking level corresponds to 75%, and peak white to 12.5%. The zero carrier reference level corresponds to 0%. Over modulation often shows up in the picture as a nonlinear distortion such as differential phase or differential gain. Incidental Carrier Phase Modulation (ICPM) or white clipping may also result. Under modulation often result in degraded signal-to-noise performance.



Depth Shadow – A shadow that extends solidly from the edges of a title or shape to make it appear three-dimensional. See also Drop Shadow.

Dequantization – The process of rescaling the quantized discrete cosine transform coefficients after their representation in the bit stream has been decoded and before they are presented to the inverse DCT.

Descrambler – Electronic circuit that restores a scrambled video signal to its original form. Television signals – especially those transmitted by satellite – are often scrambled to protect against theft and other unauthorized use.

Description – Consists of a description scheme (structure) and a set of descriptor values (instantiations) that describe the data.

Description Definition Language (DDL) – A language that allows the creation of new description schemes and, possibly, descriptors. It also allows the extension and modification of existing description schemes.

Description Scheme (DS) – Specifies the structure and semantics of the relationships between its components, which may be both descriptors and description schemes.

Descriptor (D) – a) MPEG systems data structures that carry descriptive and relational information about the program(s) and their Packetized Elementary Streams (PES). **b)** A representation of a feature, a descriptor defines the syntax and the semantics of the feature representation. **c)** A data structure that is used to describe particular aspects of an elementary stream or a coded media object.

Descriptor Value – An instantiation of a descriptor for a given data set (or subset thereof).

Deserializer – A device that converts serial digital information to parallel.

Desk Top Video (DTV) – a) Use of a desktop computer for video production. **b)** Self-contained computer and display with integrated video and optional network interface for local and remote work and information access.

Detail – Refers to the most minute elements in a picture which are distinct and recognizable. Similar to Definition or Resolution.

Deterministic – A process or model whose outcome does not depend upon chance, and where a given input will always produce the same output. Audio and video decoding processes are mostly deterministic.

Development System – Microcomputer system with all the facilities required for hardware and software development for a given microprocessor. Generally consists of a microcomputer system, CRT display, printer, mass storage (usually dual floppy-disk drivers), PROM programmer, and in-circuit emulator.

Device Driver – Software to enable a computer to access or control a peripheral device, such as a printer.

Device Interface – A conversion device that separates the RGB and sync signals to display computer graphics on a video monitor.

DFD (Displaced Frame Difference) – Differential picture if there is motion.

D-Frame – Frame coded according to an MPEG-1 mode which uses DC coefficients only.

DHEI (DigiCable Headend Expansion Interface) – The DigiCable Headend Expansion Interface (DHEI) is intended for the transport of MPEG-2 system multiplexes between pieces of equipment in the headend. It originally was a proprietary interface of General Instrument, but now has been standardized by the SCTE (Society of Cable Telecommunications Engineers) for use in the cable industry.

Diagnostics – A series of tests that check hardware components of a system.

Diagonal Resolution – Amount of detail that can be perceived in a diagonal direction. Although diagonal resolution is a consequence of horizontal and vertical resolution, it is not automatically equivalent to them. In fact, ordinary television systems usually provide about 40 percent more diagonal

resolution than horizontal or vertical. Many ATV schemes intentionally sacrifice diagonal resolution in favor of some other characteristics (such as improved horizontal or vertical resolution) on the theory that human vision is less sensitive to diagonal resolution than to horizontal or vertical. There is some evidence that diagonal resolution could be reduced to about 40 percent less than either horizontal or vertical (overall half of its NTSC value) with no perceptible impairment. See also Resolution.

Diagonal Split – An unusual quad split feature found on Ampex switchers, allowing diagonal or X shaped divisions between sources, as opposed to the traditional horizontal and vertical divisions.

Dialog Normalization Value – The dialog normalization value is a Dolby Digital parameter that describes the long-term average dialog level of the associated program. It may also describe the long-term average level of programs that do not contain dialog, such as music. This level is specified on an absolute scale ranging from -1 dBFS to -31 dBFS. Dolby Digital decoders attenuate programs based on the dialog normalization value in order to achieve uniform playback level.

DIB (Device Independent Bitmap) – A file format that represents bitmap images in a device-independent manner. Bitmaps can be represented at 1, 4 and 8 bits-per-pixel with a palette containing colors representing 24 bits. Bitmaps can also be represented at 24 bits-per-pixel without a palette in a run-length encoded format.

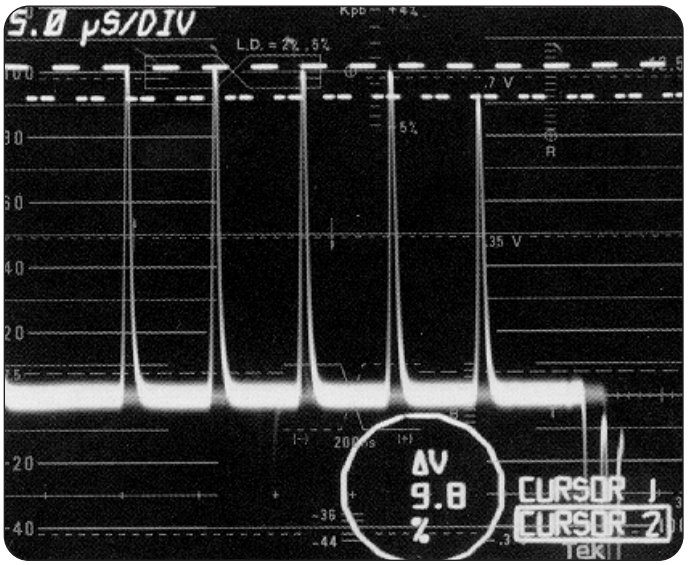
Dielectric – An insulating (nonconductive) material.

Differential Gain – a) A nonlinear distortion often referred to as "diff gain" or "dG". It is present if a signal's chrominance gain is affected by luma levels. This amplitude distortion is a result of the system's inability to uniformly process the high frequency chrominance signals at all luma levels. The amount of differential gain distortion is expressed in percent. Since both attenuation and peaking of chrominance can occur in the same signal, it is important to specify whether the maximum over all amplitude difference or the maximum deviation from the blanking level amplitude is being quoted. In general, NTSC measurement standard define differential gain as the largest amplitude deviation between any two levels, expressed as a percent of the largest chrominance amplitude. When differential gain is present, color saturation has an unwarranted dependence on luminance level. Color saturation is often improperly reproduced at high luminance levels. The Modulated Ramp or Modulated Stair Step signals can be used to test for differential gain. **b)** The amplitude change, usually of the 3.6 MHz color subcarrier, introduced by the overall circuit, measured in dB or percent, as the subcarrier is varied from blanking to white level.

Differential Phase – a) A nonlinear distortion often referred to as "diff phase" or "dP". It is present if a signal's chrominance phase is affected by the luminance level. It occurs because of the system's inability to uniformly process the high frequency chrominance information at all luminance levels. Diff phase is expressed in degrees of subcarrier phase. The subcarrier phase can be distorted such that the subcarrier phase is advanced (lead or positive) or delayed (lag or negative) in relation to its original position. In fact, over the period of a video line, the subcarrier phase can be both advanced and delayed. For this reason it is important to specify whether "peak to peak diff phase" is being specified or "maximum deviation from 0" in one direction or another. Normally the "peak to peak diff phase" is given. dP distortions cause changes in hue when picture brightness changes. Colors may not be properly reproduced, particularly in high-luminance areas of the picture. **b)** The phase change of the 3.6 MHz color subcarrier introduced by the overall circuit, measured in degrees, as the subcarrier is varied from blanking to white level.

Differential Pulse Code Modulation – DPCM is a source coding scheme that was developed for encoding sources with memory. The reason for using the DPCM structure is that for most sources of practical interest, the variance of the prediction error is substantially smaller than that of the source.

Differentiated Step Filter – A special "diff step" filter is used to measure luminance nonlinearity. When this filter is used with a luminance step waveform each step on the waveform is translated into a spike that is displayed on the waveform monitor. The height of each spike translates into the height of the step so the amount of distortion can be determined by comparing the height of each spike. Refer to the figure below.



Diffuse – a) Diffuse light is the light reflected by a matte surface; without glare or highlight. It is based on relative orientation of surface normal and light source positions and luminance. **b)** Widely spread or scattered. Used to define lighting that reflects equally in all directions producing a matte, or flat, reflection on an object. The reflection intensity depends on the light source relative to the surface of the object.

DigiCipher® – DigiCipher is a compression and transmission technology from General Instrument (now Motorola), dedicated to Digital TV distribution via satellite. DigiCipher video coding is based on DCT like MPEG, but does not use B-pictures. Instead, it uses a so-called adaptive prediction mode. DigiCipher 1 was the first incarnation and is still used today by many providers since it was the first commercially available digital compression scheme.

DigiCipher® II – This is General Instrument's (now Motorola) latest distribution system and is the standard for 4DTV product. DCII uses standard MPEG-2 video encoding, but just about everything else in this "standard" is unique to DCII. For example, DVB/MPEG-2 uses Musicam for audio where-

as DCII uses Dolby AC-3. Despite using the same video standard, DVB/MPEG-2 and DCII signals are totally incompatible and no receiver can currently receive both.

Digiloop – Patented circuitry within the Vista switcher, which allows the insertion of a digital effects device within the architecture of the switcher. This allows multi-channels of digital effects to be utilized on a single M/E, which would otherwise require 3 M/Es.

Digimatte (Menu) – The key channel processor, providing a separate channel specifically for black and white key signals that processes and manipulates an external key signal in the same way as source video in 3D space.

Digit – Sign or symbol used to convey a specific quantity of information either by itself or with other numbers of its set: 2, 3, 4, and 5 are digits. The base or radix must be specified and each digit's value assigned.

DigiTAG (Digital Television Action Group)

Digital – a) Having discrete states. Most digital logic is binary, with two states (on or off). **b)** A discontinuous electrical signal that carries information in binary fashion. Data is represented by a specific sequence of off-on electrical pulses. A method of representing data using binary numbers. An analog signal is converted to digital by the use of an analog-to-digital (A/D) converter chip by taking samples of the signal at a fixed time interval (sampling frequency). Assigning a binary number to these samples, this digital stream is then recorded onto magnetic tape. Upon playback, a digital-to-analog (D/A) converter chip reads the binary data and reconstructs the original analog signal. This process virtually eliminates generation loss as every digital-to-digital copy is theoretically an exact duplicate of the original allowing multi-generational dubs to be made without degradation. In actuality of course, digital systems are not perfect and specialized hardware/software is used to correct all but the most severe data loss. Digital signals are virtually immune to noise, distortion, crosstalk, and other quality problems. In addition, digitally based equipment often offers advantages in cost, features, performance and reliability when compared to analog equipment.

Digital 8 – Digital 8 compresses video using standard DV compression, but records it in a manner that allows it to use standard Hi-8 tape. The result is a DV "box" that can also play standard Hi-8 and 8 mm tapes. On playback, analog tapes are converted to a 25 Mbps compressed signal available via the iLink digital output interface. Playback from analog tapes has limited video quality. New recordings are digital and identical in performance to DV; audio specs and other data also are the same.

Digital Audio – Audio that has been encoded in a digital form for processing, storage or transmission.

Digital Audio Broadcasting (DAB) – a) NRSC (National Radio Systems Committee) term for the next generation of digital radio equipment. **b)** Modulations for sending digital rather than analog audio signals by either terrestrial or satellite transmitter with audio response up to compact disc quality (20 kHz). c) DAB was started as EUREKA project EU 147 in 1986. The digital audio coding process called MUSICAM was designed within EUREKA 147 by CCETT. The MUSICAM technique was selected by MPEG as the basis of the MPEG-1 audio coding, and it is the MPEG-1 Layer II algorithm which will be used in the DAB system. The EUREKA 147 project, in close cooperation with EBU, introduced the DAB system approach to the ITU-R, which subsequently has been contributing actively for the worldwide recognition and standardization of the DAB system. EBU, ETSI and EUREKA 147 set up a joint task committee with the purpose of defining a European Telecommunications Standard (ETS) for digital sound broadcasting, based on the DAB specifications. ETSI published the EUREKA 147 system as standard ETS 300 401 in February 1995, and market adoption is forthcoming; the BBC, for instance, plans to have 50% transmission coverage in 1997 when DAB receivers are being introduced to the public.

Digital Audio Clipping – Occurs when the audio sample data is 0 dBFS for a number of consecutive samples. When this happens, an indicator will be displayed in the level display for a period of time set by the user.

Digital Audio Recording – A system which converts audio signals into digital words which are stored on magnetic tape for later reconversion to audio, in such a manner that dropouts, noise, distortion and other poor tape qualities are eliminated.

Digital Betacam – A development of the original analog Betacam VTR which records digitally on a Betacam-style cassette. A digital video tape format using the CCIR 601 standard to record 4:2:2 component video in compressed form on 12.5 mm (1/2") tape.

Digital Borderline – A GVG option and term. A digital border type with fewer settings, hence less control than the analog type used on Ampex switchers.

Digital Cable – A service provided by many cable providers which offers viewers more channels, access to pay-per-view programs and online guides. Digital cable is not the same as HDTV or DTV; rather, digital cable simply offers cable subscribers the options for paying for additional services.

Digital Chroma Keying – Digital chroma keying differs from its analog equivalent in that it can key uniquely from any one of the 16 million colors represented in the component digital domain. It is then possible to key from relatively subdued colors, rather than relying on highly saturated colors that can cause color spill problems on the foreground. A high-quality digital chroma keyer examines each of the three components of the picture and generates a linear key for each. These are then combined into a composite linear key for the final keying operation. The use of three keys allows much greater subtlety of selection than does a chrominance-only key.

Digital Cinemas – Facing the high costs of copying, handling and distribution of film, an infrastructure enabling digital transport of movies to digital cinemas could be highly attractive. In addition, digital delivery of films can effectively curb piracy. The MPEG-2 syntax supports the levels of quality and features needed for this application.

Digital Component – Component signals in which the values for each pixel are represented by a set of numbers.

Digital Component Video – Digital video using separate color components, such as YCbCr or RGB. See ITU-R BT.601-2. Sometimes incorrectly referred to as D1.

Digital Composite Video – The digitized waveform of (M) NTSC or (B, D, G, H, I) PAL video signals, with specific digital values assigned to the sync, blank, and white levels. Sometimes incorrectly referred to as D2 or D3.

Digital Compression – A process that reduces storage space and/or transmission data rate necessary to store or transmit information that is represented in a digital format.

Digital Cut – The output of a sequence, which is usually recorded to tape.

Digital Disk Recorder (DDR) – a) A digital video recording device based on high-speed computer disk drives. Commonly used as a means to get video into and out from computers. **b)** A video recording device that uses a hard disk or optical disk drive mechanism. Disk recorders offer quick access to recorded material.

Digital Effects – Special effects created using a digital video effects (DVE) unit.

Digital Moving Picture (dpx) – This is the SMPTE standard file format of the Digital Moving Picture Exchange Kodak Cineon raster file format.

Digital Parallel Distribution Amplifier – A distribution amplifier designed to amplify and fan-out parallel digital signals.

Digital Recording – A method of recording in which the information (usually audio or video) is first coded in a digital form. Most commonly, a binary code is used and recoding takes place in terms of two discrete values of residual flux.

Digital Rights Management (DRM) – A generic term for a number of capabilities that allow a content producer or distributor to determine under what conditions their product can be acquired, stored, viewed, copied, loaned, etc. Popular proprietary solutions include InterTrust, etc.

Digital S – A digital tape format that uses 1.25-inch high-density metal particle tape, running at 57.8 mm/s, to record a video data rate of 50 Mbps. Video sampled at 4:2:2 is compressed at 3:3:1 using DCT-based intra-frame compression. Two individually editable audio channels are recorded using 16-bit, 48 kHz sampling. The tape can be shuttled and searched up to x32 speed. Digital S includes two cue tracks and four further audio channels in a cassette housing with the same dimensions as VHS.

Digital Sampling Rate – This is the frequency at which an analog signal is sampled to create a digital signal.

Digital Signal – An electronic signal where every different value from the real-life excitation (sound, light) has a different value of binary combinations (words) that represent the analog signal.

Digital Simultaneous Voice and Data (DSVD) – DSVD is a method for combining digital voice and data packets for transmission over an analog phone line.

Digital Storage Media (DSM) – a) A means of storage (usually magnetic tape, disk or DVD) for audio, video or other information, that is in binary form. **b)** A digital storage or transmission device or system.

Digital Storage Media, Command and Control (DSM-CC) – DSM-CC is part 6 of ISO/IEC 12818 MPEG-2 standard. It specifies open interfaces and protocols for delivery of multimedia broadband services and is transport-layer independent.

Digital System – A system utilizing devices that can be in only one of two possible states.

Digital Television Communications System (DITEC) – System developed by Comstat Corp. for satellite links.

Digital Transmission Content Protection (DTCP) – An encryption method (also known as 5D) developed by Sony, Hitachi, Intel, Matsushita and Toshiba for IEEE 1394 interfaces.

Digital Tuner, Digital Receiver – A digital tuner serves as the decoder required to receive and display digital broadcasts. A digital tuner can down-convert broadcasts for an analog TV or provide a digital signal to a digital television. It can be included inside TV sets or via a set-top box.

Digital TV Group – This is a UK forum of technology and service providers created in August 1995 with the objective to speed up the introduction of digital terrestrial TV in the UK. With its focus on implementation aspects, the efforts of the group are seen as an extension of the work done in DVB. Membership is open to those DVB members who wish to participate actively in the introduction of digital terrestrial TV in the UK.

Digital Versatile Disk (DVD) – The modern proposals for DVD are the result of two former optical disc formats, supporting the MMCD (Multimedia CD) and the SD (Super Density) formats. The two groups agreed on a third format. The DVD, initially, addressed only movie player applications, but today's DVD is positioned as a high-capacity multimedia storage medium. The DVD consortium addresses topics such as video, ROM, audio-only, and copy protection. The movie player remains the DVD's prime application, but the DVD is taking an increasingly large share of the CD-ROM market. The promoters of the format agreed in December 1995 on a core set of specifications. The system operates at an average data rate of 4.69 Mbit/s and features 4.7 GB data capacity, which allows MPEG-2 coding of movies, or which may be utilized for a high-resolution music disc. For the PAL and NTSC specifications of the DVD, different audio coding has been chosen to obey market patterns. For the NTSC version, the Dolby AC-3 coding will be mandatory, with MPEG audio as an option, whereas the opposite is true for PAL and SECAM markets.

Digital Vertical Interval Timecode (DVITC) – DVITC digitizes the analog VITC waveform to generate 8-bit values. This allows the VITC to be used with digital video systems. For 525-line video systems, it is defined by SMPTE 266M. BT.1366 defines how to transfer VITC and LTC as ancillary data in digital component interfaces.

Digital Video (DV) – A video signal represented by computer-readable binary numbers that describe colors and brightness levels.

Digital Video Broadcasting (DVB) – a) A system developed in Europe for digital television transmission, originally for standard definition only, though high-definition modes have now been added to the specification. DVB defines a complete system for terrestrial, satellite, and cable transmission. Like the ATSC system, DVB uses MPEG-2 compression for video, but it uses MPEG audio compression and COFDM modulation for terrestrial transmission. b) At the end of 1991, the European Launching Group (ELG) was formed to spearhead the development of digital TV in Europe. During 1993, a Memorandum of Understanding was drafted and signed by the ELG participants, which now included manufacturers, regulatory bodies and other interest groups. At the same time, the ELG became Digital Video Broadcasting (DVB). The TV system provided by the DVB is based on MPEG-2 audio and video coding, and DVB has added various elements not

included in the MPEG specification, such as modulation, scrambling and information systems. The specifications from DVB are offered to either ETSI or CENELEC for standardization, and to the ITU.

Digital Video Cassette (DVC) – a) Tape width is 1/4", metal particle formula. The source and reconstructed video sample rate is similar to that of CCIR-601, but with additional chrominance subsampling (4:1:1 in the case of 30 Hz and 4:2:0 in the case of 25 Hz mode). For 30 frames/sec, the active source rate is 720 pixels/lines x 480 lines/frame x 30 frames/sec x 1.5 samples/pixel average x 8 samples/pixel = ~124 Mbit/sec. A JPEG-like still image compression algorithm (with macroblock adaptive quantization) applied with a 5:1 reduction ratio (target bit rate of 25 Mbit/sec) averaged over a period of roughly 100 microseconds (100 microseconds is pretty small compared to MPEG's typical 1/4 second time average!) **b)** A digital tape recording format using approximately 5:1 compression to produce near-Betacam quality on a very small cassette. Originated as a consumer product, but being used professionally as exemplified by Panasonic's variation, DVC-Pro.

Digital Video Cassette Recorder (Digital VCR) – Digital VCRs are similar to analog VCRs in that tape is still used for storage. Instead of recording an analog audio/video signal, digital VCRs record digital signals, usually using compressed audio/video.

Digital Video Disc – See DVD.

Digital Video Express (DIVX) – A short-lived pay-per-viewing-period variation of DVD.

Digital Video Interactive (DVI) – A multimedia system being marketed by Intel. DVI is not just an image-compression scheme, but includes everything that is necessary to implement a multimedia playback station. including chips, boards, and software. DVI technology brings television to the microcomputer. DVI's concept is simple: information is digitized and stored on a random-access device such as a hard disk or a CD-ROM, and is accessed by a computer. DVI requires extensive compression and real-time decompression of images. Until recently this capability was missing. DVI enables new applications. For example, a DVI CD-ROM disk on twenti-eth-century artists might consist of 20 minutes of motion video; 1,000 high-res still images, each with a minute of audio; and 50,000 pages of text. DVI uses the YUV system, which is also used by the European PAL color television system. The Y channel encodes luminance and the U and V channels encode chrominance. For DVI, we subsample 4-to-1 both vertical-ly and horizontally in U and V, so that each of these components requires only 1/16 the information of the Y component. This provides a compression from the 24-bit RGB space of the original to 9-bit YUV space. The DVI concept originated in 1983 in the inventive environment of the David Sarnoff Research Center in Princeton, New Jersey, then also known as RCA Laboratories. The ongoing research and development of television since the early days of the Laboratories was extending into the digital domain, with work on digital tuners, and digital image processing algo-rithms that could be reduced to cost-effective hardware for mass-market consumer television.

Digital Video Noise Reduction (DVNR) – Digitally removing noise from video by comparing frames in sequence to spot temporal aberrations.

Digital Video Recording – "D1" Component, "D2" Composite.

Digital Word – The number of bits treated as a single entity by the system.

Digital Workstation – The computer-based system used for editing and manipulating digital audio, and synchronizing digital audio with video for video post-production applications (e.g., Adobe Premiere).

Digital Zoom – A feature found on some camcorders that electronically increases the lens zoom capability by selecting the center of the image and enlarging it digitally.

Digitally Record – To convert analog video and audio signals to digital signals.

Digitization – The process of changing an electronic signal that is an analogy (analog) of a physical process such as vision or hearing into a discrete numerical form. Digitization is subdivided into the processes of sampling the analog signal at a moment in time, quantizing the sample (assigning it a numerical level), and coding the number in binary form. The advantages of digitization include improved transmission; the disad-vantages include a higher bit rate than the analog bandwidth. Bit rate reduction schemes work to reduce that disadvantage.

Digitize – a) The process of turning an analog signal into digital data. **b)** To convert an image from hard copy (a photo) into digital data for display on a computer. **c)** To convert an analog signal into digital form for storage on disk arrays and processing.

Digitizer – A system that converts an analog input to a digital format, such as analog-to-digital converters (ADC), touch tablets and mice. The last two, for example, take a spatial measurement and present it to a computer as a digital representation.

Digitizing – The act of taking analog audio and/or video and converting it to digital form. In 8 bit digital video there are 256 possible steps between maximum white and minimum black.

Digitizing Time – Time taken to record footage into a disk-based editing system, usually from a tape-based analog system, but also from newer digital tape formats without direct digital connections.

DigiTrail – An enhancement of ADO effects by adding trails, smearing, sparkles, etc.

DigiVision – A company with an early line-doubling ATV scheme.

DII (Download Information Indication) – Message that signals the modules that are part of a DSM-CC object carousel.

Dimmer Switch – A control used to gradually increase and decrease the electricity sent to lighting fixture, thereby effecting the amount of light given by the lighting fixture.

DIN (Deutsches Institut fuer Normung) – A German association that sets standards for the manufacture and performance of electrical and electronic equipment, as well as other devices. DIN connectors carry both audio and video signals and are common on equipment in Europe. (Also referred to as Deutsche Industrie Normenausschuss.)

Dip – An adjustment to an audio track in which the volume gain level decreases or "dips" to a lower level, rather than fading completely.

DIP (Dual In-Line Package) – Standard IC package with two parallel rows of pins.

Dipswitch – A block of small switches formed so that they fit into an IC socket or into a PCB on standard IC spacing.

Direct Access Restriction – The ability to limit a user's capability to gain access to material not intended in the product structure. This is not parental control, but it is useful for material such as games or training material where such access would destroy the intent of the product. This type of control is usually accomplished with pre and post commands in the authoring process.

Direct Addressing – Standard addressing mode, characterized by the ability to reach any point in main storage directly. The address is specified as part of the instruction.

Direct Broadcast Satellite (DBS) – a) A distribution scheme involving transmission of signals directly from satellites to homes. It does not carry the burden of terrestrial broadcasting's restricted bandwidth and regulations and so is thought by many to be an ideal mechanism for the introduction of high base bandwidth ATV. DBS is the most effective delivery mechanism for reaching most rural areas; it is relatively poor in urban areas and in mountainous terrain, particularly in the north. Depending on frequency band used, it can be affected by factors such as rain. **b)** Multiple television channel programming service that is transmitted direct from high powered satellites, directly to a home receiving dish.

Direct Color – An SVGA mode for which each pixel color value is specified directly by the contents of a bit field.

Direct Digital Interface – The interconnection of compatible pieces of digital audio or video equipment without conversion of the signal to an analog form.

Direct Draw Overlay – This is a feature that lets you see the video full screen and full motion on your computer screen while editing. Most new 3D graphics cards support this. If yours does not, it simply means you will need an external monitor to view the video. Direct Draw Overlay has absolutely nothing to do with your final video quality.

Direct Memory Access (DMA) – Method of gaining direct access to main storage in order to perform data transfers without involving the CPU.

Direct Recording – A type of analog recording which records and reproduces data in the electrical form of its source.

Direct Sound – The sound which reaches a mike or listener without hitting or bouncing off any obstacles.

Direct to Disk – A method of recording directly to the cutting head of the audio disk cutter, eliminating the magnetic recorder in the sequence, typified by no tape hiss.

Direction Handle – A line extending from a control point that controls the direction of a Bézier curve. Each control point has two direction handles. These two handles together affect how the curve passes through the control point, with one handle controlling how the curve appears before the control point, and the other handle controlling how the curve appears after the control point.

Directional Antenna – An antenna that directs most of its signal strength in a specific direction rather than at equal strength in all directions.

Directional Microphone – One whose sensitivity to sound varies with direction. Such microphones can be aimed so their most sensitive sides face the sound source, while their least sensitive sides face sources of noise or other undesired sound.

Directional Source – Light that emanates from a constant direction with a constant intensity. This is called the infinite light source.

Directory – a) A container in the file system in which you store other directories and files. **b)** A logical or physical portion of a hard disk drive where the operating system stores files.

DirectShow – The application programming interface (API) for client-side playback, transformation, and capture of a wide variety of data formats. DirectShow is the successor to Microsoft Video for Windows® and Microsoft ActiveMovie, significantly improving on these older technologies.

Direct-View – A CRT watched directly, as opposed to one projecting its image on a screen.

Dirty List (Dirty EDL) – An edit decision list (EDL) containing overlapping or redundant edits. Contrast with Clean List (Clean EDL).

DIS (Draft International Standard) – The last step before a fast-track document is approved as an International Standard. Note: The fast-track process is a different process than the normal development process. DIS documents are balloted and approved at the TC-level.

Disable – Process of inhibiting a device function.

Disc Array – Multiple hard disks formatted to work together as if they were part of a single hard drive. Disc arrays are typically used for high data rate video storage.

Discrete – Having an individual identity. An individual circuit component.

Discrete Cosine Transform (DCT) – a) Used in JPEG and the MPEG, H.261, and H.263 video compression algorithms, DCT techniques allow images to be represented in the frequency rather than time domain. Images can be represented in the frequency domain using less information than in the time domain. **b)** A mathematical transform that can be perfectly undone and which is useful in image compression. c) Many encoders perform a DCT on an eight-by-eight block of image data as the first step in the image compression process. The DCT converts the video data from the time domain into the frequency domain. The DCT takes each block, which is a 64-point discrete signal, and breaks it into 64 basis signals. The output of the operation is a set of 64 basis-signal amplitudes, called DCT coefficients. These coefficients are unique for each input signal. The DCT provides a basis for compression because most of the coefficients for a block will be zero (or close to zero) and do not need to be encoded.

Discrete Signals – The sampling of a continuous signal for which the sample values are equidistant in time.

Discrete Surround Sound – Audio in which each channel is stored and transmitted separate from and independent of other channels. Multiple independent channels directed to loudspeakers in front of and behind the listener allow precise control of the sound field in order to generate localized sounds and simulate moving sound sources.

Discrete Time Oscillator (DTO) – Digital implementation of the voltage controlled oscillator.

Dish – A parabolic antenna used to receive satellite transmissions at home. The older "C band" dishes measure 7-12 feet in diameter, while the newer "Ku band" dishes used to receive high-powered DBS services can be as small as 18 inches in diameter.

Disk (Menus) – Recall and Store enable effects to be stored, renamed and recalled on 3-1/2" disks in the disk drive provided with the system.

Disk Drive – The machine used to record and retrieve digital information on disk.

Disk Resource – Any disk (hard, CD-ROM, or floppy) that you can access either because it is physically attached to your workstation with a cable, or it is available over the network.

Disk Use – The percentage of space on your disk that contains information.

Disk, Disc – a) An information/digital data storage medium. **b)** A flat circular plate, coated with a magnetic material, on which data may be stored by selective magnetization of portions of the surface. May be a flexible, floppy disk or rigid hard disk. It could also be a plastic compact disc (CD) or digital video disc (DVD).

Dispersion – Distribution of the oxide particles within the binder. A good dispersion can be defined as one in which equal numbers of particles would be found in equal, vanishingly small volumes sampled from different points within the coating.

Displacement Mapping – The adding of a 3D effect to a 2D image.

Displacement of Porches – Refers to any difference between the level of the front porch and the level of the back porch.

Display – a) The ultimate image presented to a viewer; the process of presenting that image. **b)** CRT, LCD, LED or other photo luminescent panel upon which numbers, characters, graphics or other data is presented.

Display Order – The order in which the decoded pictures are displayed. Normally this is the same order in which they were presented at the input of the encoder.

Display Rate – The number of times/sec the image in a video system is refreshed. Progressive scan systems such as film or HDTV change the image once per frame. Interlace scan systems such as standard TV change the image twice per frame, with two fields in each frame. Film has a frame rate of 24 fps but each frame is shown twice by the projector for a display rate of 48 fps. NTSC TV has a rate of 29.97 fps, PAL 25 fps.

Display Signal Processing – An efficient, widely compatible system required that distribution be free of detailed requirements specific to display, and that necessary additional display processing unique to that display class be conducted only at the display. The variety of display systems, already numerous, continues to increase. Each system or variant has its own set of specifications, performance characteristics, and requirements, including electro-optic transfer function, color gamut, scanning sequence, etc. Display signal processing might include transformation at the display to the appropriate luminance range and chrominance, to display primaries and reference white, matrixing to achieve metameric color match, adaptation to surround, plus conversion to scanning progressive or scanning interlaced, etc. Display processing may not be required for transmission if there is unique point-to-point routing clearly identified and appropriate processing has been provided in distribution. But it is frequently required for emission to a diffuse population of display system.

Dissolve – a) A process whereby one video signal is gradually faded out while a second image simultaneously replaces the original one. **b)** A video or audio transition in which an image from one source gradually becomes less distinct as an image from a second source replaces it. An audio dissolve is also called a segue. See also Crossfade, Fade.

Distance Learning – Technologies that allow interactive remote site classes or training by use of multipoint or point-to-point connections.

Distant Miking – Placing a mike far from a sound source so that a high proportion of reflected sound is picked up.

Distant Signal – TV signals which originate at a point too far away to be picked up by ordinary home reception equipment; also signals defined by the FCC as outside a broadcaster's license area. Cable systems are limited by FCC rules in the number of distant signals they can offer subscribers.

Distortion – In video, distortion usually refers to changes in the luminance or chrominance portions of a signal. It may contort the picture and produce improper contrast, faulty luminance levels, twisted images, erroneous colors and snow. In audio, distortion refers to any undesired changes in the waveform of a signal caused by the introduction of spurious elements. The most common audio distortions are harmonic distortion, intermodulation distortion, crossover distortion, transient distortion and phase distortion.

Distribution – a) The process of getting a television signal from point to point; also the process of getting a television signal from the point at which it was last processed to the viewer. See also Contribution. **b)** The delivery of a completed program to distribution-nodes for emission/transmission as an electrical waveform, or transportation as physical package, to the intended audiences. Preparation for distribution is the last step of the production cycle. Typical distribution-nodes include: release and duplicating laboratories, satellite systems, theatrical exchanges, television networks and groups, cable systems, tape and film libraries, advertising and program agencies, educational systems, government services administration, etc.

Distribution Amplifier – Device used to multiply (fan-out) a video signal. Typically, distribution amplifiers are used in duplication studios where many tape copies must be generated from one source or in multiple display setups where many monitors must carry the same picture, etc. May also include cable equalization and/or delay.

Distribution Quality – The level of quality of a television signal from the station to its viewers. Also know as Emission Quality.

DIT (Discontinuity Information Table)

DITEC – See Digital Television Communications System.

Dither – a) Typically a random, low-level signal (oscillation) which maybe added to an analog signal prior to sampling. Often consists of white noise of one quantizing level peak-to-peak amplitude. **b)** The process of representing a color by mixing dots of closely related colors.

Dither Component Encoding – A slight expansion of the analog signal levels so that the signal comes in contact with more quantizing levels. The results are smoother transitions. This is done by adding white noise

(which is at the amplitude of one quantizing level) to the analog signal prior to sampling.

Dither Pattern – The matrix of color or gray-scale values used to represent colors or gray shades in a display system with a limited color palette.

Dithering – Giving the illusion of new color and shades by combining dots in various patterns. This is a common way of gaining gray scales and is commonly used in newspapers. The effects of dithering would not be optimal in the video produced during a videoconference.

DIVX – A commercial and non-commercial video codec that enables high quality video at high compression rates.

DivX – A hacked version of Microsoft's MPEG4 codec.

DLT (Digital Linear Tape) – a) A high capacity data tape format. **b)** A high-density tape storage medium (usually 10-20 gigabytes) used to transport and input data to master a DVD. Media is designated as "Type III" or "Type IV" for tapes used for DVD.

DMA – See Direct Memory Access.

D-MAC – Originally, a MAC (Multiplexed Analog Component) with audio and data frequency multiplexed after modulation, currently a term used in Europe to describe a family of B-MAC-like signals, one of which is the British choice for DBS. See also MAC.

DMD (Digital Micro-Mirror Device) – A new video projection technology that uses chips with a large number of miniature mirrors, whose projection angle can be controlled with digital precision.

DMIF (Digital Storage Media-Command and Control Multimedia Integration Framework) – In November 1996, a work item on DMIF (DSM-CC Multimedia Integration Framework) was accepted as part 6 of the MPEG-4 ISO/IEC 14496 work activity. DMIF extends the concepts in DSM-CC to symmetric conversational applications and the addition of Internet as a core network. These extensions are required to satisfy the needs of MPEG-4 applications.

DMK (Downstream Mixer-Keyer) – See DSK.

DM-M (Delayed Modulation Mark) – Also called Miller Code.

D-Mode – An edit decision list (EDL) in which all effects (dissolves, wipes, graphic overlays) are performed at the end. See also A-Mode, B-Mode, C-Mode, E-Mode, Source Mode.

DNG (Digital News Gathering) – Electronic News Gathering (ENG) using digital equipment and/or transmission.

DNL – Noise reduction system produced by Philips.

DNR (Dynamic Noise Reduction) – This filter reduces changes across frames by eliminating dynamic noise without blurring. This helps MPEG compression without damaging image quality.

Document Window – A sub-window inside an application. The size is user adjustable but limited by the size of its application window.

Dolby AC-2 and AC-3 – These are compression algorithms from the Dolby Laboratories. The AC-2 coding is an adaptive transform coding that includes a filterbank based on time domain alias cancellation (TDAS). The AC-3 is a dedicated multichannel coding, which like AC-2 uses adaptive transform coding with a TDAS filterbank. In addition, AC-3 employs a bit-allocation routine that distributes bits to channels and frequencies depending on the signals, and this improves the coding efficiency compared to AC-2. The AC-3 algorithm is adopted for the 5.1-channel audio surround system in the American HDTV system.

Dolby Digital – Formerly AC-3, a perceptual audio coding system based upon transform coding techniques and psycho-acoustic principles. Frequency-domain processing takes full advantage of noise masking by confining quantization noise to narrow spectral regions where it will be masked by the audio signal. Designed as an emissions (delivery) system, Dolby Digital provides flexible coding of up to 5.1 audio channels at a variety of data rates. In addition, Dolby Digital bit streams carry informational data about the associated audio.

Dolby Laboratories – Founded in 1965, Dolby Laboratories is well known for the technologies it has developed for improving audio sound reproduction, including their noise reduction systems (e.g., Dolby A, B, and C), Dolby Digital (AC-3), Dolby Surround, and more. For more information, visit the Dolby Laboratories website.

Dolby Pro Logic – The technique (or the circuit which applies the technique) of extracting surround audio channels from a matrix-encoded audio signal. Dolby Pro Logic is a decoding technique only, but is often mistakenly used to refer to Dolby Surround audio encoding.

Dolby Surround – A passive system that matrix encodes four channels of audio into a standard two-channel format (Lt/Rt). When the signal is decoded using a Dolby Surround Pro Logic decoder, the left, center and right signals are recovered for playback over three front speakers and the surround signal is distributed over the rear speakers.

Dolby Surround Pro Logic (DSPL) – An active decoding process designed to enhance the sound localization of Dolby Surround encoded programs through the use of high-separation techniques. Dolby Surround Pro Logic decoders continuously monitor the encoded audio program and evaluate the inherent sound field dominance, applying enhancement in the same direction and in proportion to that dominance.

Dolby™ **–** A compression/expansion (companding) noise reduction system developed by Ray Dolby, widely used in consumer, professional and broadcast audio applications. Signal-to-noise ratio improvement is accomplished by processing a signal before recording and reverse-processing the signal upon playback.

Dolly – a) A set of casters attached to the legs of a tripod to allow the tripod to roll **b)** A forward/backward rolling movement of the camera on top of the tripod dolly.

Domain – a) The smallest known permanent magnet. **b)** Program Chains (PGC) are classified into four types of domains, including First Play Domain, Video Manager Menu Domain, VTS Menu Domain and Title Domain.

Dongle – A hardware device used as a key to control the use of licensed software. The software can be installed on any system but will run only on the system that has a dongle installed. The dongle connects to the Apple Desktop Bus on Macintosh systems or to the parallel (printer) port on PC systems.

Doppler Effect – An effect in which the pitch of a tone rises as its source approaches a listener, and falls as the source moves away from the listener.

DOS (Disk Operating System) – a) A single-user operating system from Microsoft for the PC. It was the first operating system for the PC and is the underlying control program for Windows 3.1, 95, 98 and ME. Windows NT, 2000 and XP emulate DOS in order to support existing DOS applications. **b)** A software package that makes a computer work with its hardware devices such as hard drive, floppy drive, screen, keyboard, etc.

Dot Crawl – See Chroma Crawl.

Dot Matrix – Method of forming characters by using many small dots.

Dot Pitch – a) This is the density measurement of screen pixels specified in pixels/mm. The more dense the pixel count, the better the screen resolution. **b)** The distance between phosphor dots in a tri-color, direct-view CRT. It can be the ultimate determinant of resolution.

Double Buffering – As the name implies, you are using two buffers, for video, this means two frame buffers. While buffer 1 is being read, buffer 2 is being written to. When finished, buffer 2 is read out while buffer 1 is being written to.

Double Precision Arithmetic – Uses two words to represent each number.

Double System – Any film system in which picture and sound are recorded on separate media. A double system requires the resyncing of picture and sound during post-production.

Double-Click – To hold the mouse still, then press and release a mouse button twice, very rapidly. When you double-click an icon it opens into a window; when you double-click the Window menu button the window closes.

Double-Perf Film – Film stock with perforations along both edges of the film.

Double-Strand Editing – See A/B Roll.

Doubling – To overdub the same part that has previously been recorded, with the object of making the part appear to have been performed by several instruments playing simultaneously.

Down Converter – This device accepts modulated high frequency television signals and down converts the signal to an intermediate frequency.

Down Link – a) The frequency satellites use to transmit data to earth stations. **b)** Hardware used to transmit data to earth stations.

Download – The process of having an effect moved from disk storage into the ADO control panel.

Downloadability – Ability of a decoder to load data or necessary decoding tools via Internet or ATM.

Downmix – A process wherein multiple channels are summed to a lesser number of channels. In the audio portion of a DVD there can be as many as 8 channels of audio in any single stream and it is required that all DVD players produce a stereo version of those channels provided on the disc. This capacity is provided as legacy support for older audio systems.

Downscaling – The process of decimating or interpolating data from an incoming video signal to decease the size of the image before placing it into memory.

Downstream – A term describing the precedence of an effect or key. The "stream" of video through a switcher allows multiple layers of effects to be accomplished, with each successive layer appearing on top of the previous one. The most downstream effect is that video which appears as the top-most layer.

Downstream Keyer – The last keyer on the switcher. A key on the DSK will appear in front of all other video. Ampex DSKs are actually DMKs, that is they also allow mixes and fades with the switcher output.

Downstream Keyer (DSK) – A term used for a keyer that inserts the key "downstream" (last layer of video within switcher) of the effects system video output. This enables the key to remain on-air while the backgrounds and effects keys are changed behind it.

DPCM – See Differential Pulse Code Modulation.

D-Pictures – Pictures for which only DC coefficients are transmitted. D-pictures are not part of MPEG-2 but only of MPEG-1. MPEG-2 decoders must be able to decode D-pictures.

Drag – To press and hold down a mouse button, then move the mouse. This drags the cursor to move icons, to highlight menu items, or to perform other functions.

DRAM (Dynamic Random Access Memory) – An integrated circuit device that stores data bits as charges in thousands of tiny capacitors. Since the capacitors are very small, DRAM must be constantly refreshed to restore charges in appropriate cells. DRAM is used for short-term memory such as frame and screen memory and memory which contains operating programs which are loaded from ROM or disk.

DRC (Dynamic Range Control) – A feature of Dolby Digital that allows the end user to retain or modify the dynamic range of a Dolby Digital Encoded program upon playback. The amount of control is dictated by encoder parameter settings and decoder user options.

Drift – Gradual shift or change in the output over a period of time due to change or aging of circuit components. Change is often caused by thermal instability of components.

Drive – A hardware device that lets you access information on various forms of media, such as hard, floppy, and CD-ROM disks, and magnetic tapes.

Drive Address – See SCSI Address.

Drive Pulse – A term commonly used to describe a set of signals needed by source equipment such as a camera. This signal set may be composed of any of the following: sync, blanking, subcarrier, horizontal drive, vertical drive, and burst flag. Also called pulse drive.

Driving Signals – Signals that time the scanning at the pickup device.

Drop Field Scrambling – This method is identical to the sync suppression technique for scrambling analog TV channels, except there is no suppression of the horizontal blanking intervals. Sync pulse suppression only takes place during the vertical blanking interval. The descrambling pulses still go out for the horizontal blanking intervals (to fool unauthorized

descrambling devices). If a descrambling device is triggering on descrambling pulses only, and does not know that the scrambler is using the drop field scrambling technique, it will try to reinsert the horizontal intervals (which were never suppressed). This is known as double reinsertion, which causes compression of the active video signal. An unauthorized descrambling device creates a washed-out picture and loss of neutral sync during drop field scrambling.

Drop Frame – a) System of modifying the frame counting sequence (dropping two frames every minute except on every tenth minute) to allow time code to match a real-time clock. **b)** The timecode adjustment made to handle the 29.97 per second frame rate of color video by dropping certain, agreed-upon frames to compensate for the 0.03 fps discrepancy. Drop-frame timecode is critical in broadcast applications. Contrast with Non-Drop Frame.

Drop Frame Time Code – a) SMPTE time code format that skips (drops) two frames per minute except on the tenth minute, so that the time code stays coincident with real time. **b)** The television broadcast standard for time code. c) The NTSC color coding system uses a 525/60 line/field format, it actually runs at 59.94 fields per second, or 29.97 frames per second (a difference of 1:1000). Time code identifies 30 frames per second, whereas drop frame time code compensates by dropping two frames in every minute except the tenth. Note that the 625/50 PAL system is exact and does not require drop frame.

Drop Outs – Small bit of missing picture information usually caused by physical imperfections in the surface of the video tape.

Drop Shadow – a) A type of key border where a key is made to look three dimensional and as if it were illuminated by a light coming from the upper left by creating a border to the right and bottom. **b)** A key border mode which places a black, white or gray border to the right and below the title key insert, giving a shadow effect.

Drop-Down List Box – Displays a list of possible options only when the list box is selected.

Dropout – a) A momentary partial or complete loss of picture and/or sound caused by such things as dust, dirt on the videotape or heads, crumpled videotape or flaws in the oxide layer of magnetic tape. Uncompensated dropout produces white or black streaks in the picture. **b)** Drop in the playback radio frequency level, resulting from an absence of oxide on a portion of the videotape, causing no audio or video information to be stored there. Dropout usually appears as a quick streak in the video.

Dropout Compensator – Technology that replaces dropped video with the video from the previous image's scan line. High-end time base correctors usually included a dropout compensator.

Dropout Count – The number of dropouts detected in a given length of magnetic tape.

Dropped Frames – Missing frames lost during the process of digitizing or capturing video. Dropped frames can be caused by a hard drive incapable of the necessary data transfer rate.

Dry Signal – A signal without any added effects, especially without reverb.

DS (Dansk Standard) – Danish standarding body.

DS0 (Digital Service Level 0) – 64 kbps.

DS1 (Digital Service Level 1) – A telephone company format for transmitting information digitally. DS1 has a capacity of 24 voice circuits at a transmission speed of 1.544 megabits per second.

DS3 (Digital Service Level 3) – One of a hierarchy of North American data transmission rates associated with ISDN and B-ISDN, 44.736 Mbps. The terrestrial and satellite format for transmitting information digitally. DS3 has a capacity of 672 voice circuits at a transmission speed of 44.736 Mbps (commonly referred to as 45 Mbps). DS3 is used for digital television distribution using mezzanine level compression – typically MPEG-2 in nature, decompressed at the local station to full bandwidth signals (such as HDTV) and then re-compressed to the ATSC's 19.39 Mbps transmission standard.

DSI (Download Server Initiate)

DSK (Downstream Keying) – An effect available in some special effects generators and video mixers in which one video signal is keyed on top of another video signal. The lightest portions of the DSK signal replace the source video leaving the dark areas showing the original video image. Optionally, the DSK signal can be inverted so the dark portions are keyed rather than the lightest portions allowing a solid color to be added to the keyed portions. The DSK input is most commonly a video camera or character generator. The DSK signal must be genlocked to the other signals.

DSK Monitor – A video output showing program video with the DSK key over full time.

DSM – See Digital Storage Media.

DSM-CC (Digital Storage Media-Command and Control) – A syntax defined in the Mpeg-2 Standard, Part 6.

DSM-CC IS U-N (DSM-CC International Standard User-to-Network)

DSM-CC U-N (DSM-CC User-to-Network)

DSM-CC-U-U (DSM-CC User-to-User)

DSNG (Digital Satellite News Gathering) – The use of mobile communications equipment for the purpose of worldwide newscasting. Mobile units are usually vans equipped with advanced, two-way audio and video transmitters and receivers, using dish antennas that can be aimed at geostationary satellites.

DSP (Digital Signal Processing) – a) A DSP segments the voice signal into frames and stores them in voice packets. It usually refers to the electronic circuit section of a device capable of processing digital signals. **b)** When applied to video cameras, DSP means that the analog signal from the CCD sensors is converted to a digital signal. It is then processed for signal separation, bandwidth settings and signal adjustments. After processing, the video signal either remains in the digital domain for recording by a digital VTR or is converted back into an analog signal for recording or transmission. DSP is also being used in other parts of the video chain, including VTRs, and switching and routing devices.

DSRC (David Sarnoff Research Center) – Formerly RCA Laboratories (now part of SRI International), home of the ACTV research.

DSS (Direct Satellite System) – An alternative to cable and analog satellite reception initially utilizing a fixed 18-inch dish focused on one or more geostationary satellites. DSS units are able to receive multiple chan-

nels of multiplexed video and audio signals as well as programming information, email, and related data. DSS typically used MPEG-2 video and audio encoding.

DSSB (Dual Single Sideband) – A modulation technique that might be applied to two of the components of ACTV.

DTE – See Data Terminal Equipment.

DTG (Digital Terrestrial Group) – Over 80 companies that are working together for the implementation of digital television around the world, but most importantly in the UK.

DTM (Digital Transmodulation)

DTMF (Dual Tone Multi-Frequency) – The type of audio signals that are generated when you press the buttons on a touch-tone telephone.

D-to-A Converter (Digital to Analog Converter) – A device that converts digital signals to analog signals.

DTS (Decoding Time Stamp) – Part of PES header indicating when an access unit is to be decoded.

DTS (Digital Theater Sound) – A perceptual audio-coding system developed for theaters. A competitor to Dolby Digital and an optional audio track format for DVD-Video and DVD-Audio.

DTS (Digital Theater Systems) – It is a multi-channel surround sound format, similar to Dolby Digital. For DVDs that use DTS audio, the DVD – Video specification still requires that PCM or Dolby Digital audio still be present. In this situation, only two channels of Dolby Digital audio may be present (due to bandwidth limitations).

DTS-ES – A version of DTS decoding that is compatible with 6.1-channel Dolby Surround EX. DTS-ES Discrete is a variation of DTS encoding and decoding that carries a discrete rear center channel instead of a matrixed channel.

DTT (Digital Terrestrial Television) – The term used in Europe to describe the broadcast of digital television services using terrestrial frequencies.

DTTV (Digital Terrestrial Television) – DTTV (digital terrestrial television, sometimes also abbreviated DTT) is digital television (DTV) broadcast entirely over earthbound circuits. A satellite is not used for any part of the link between the broadcaster and the end user. DTTV signals are broadcast over essentially the same media as the older analog terrestrial TV signals. The most common circuits use coaxial cable at the subscriber end to connect the network to the TV receiver. Fiber optic and/or microwave links may be used between the studio and the broadcast station, or between the broadcast station and local community networks. DTTV provides a clearer picture and superior sound quality when compared to analog TV, with less interference. DTTV offers far more channels, thus providing the viewer with a greater variety of programs to choose from. DTTV can be viewed on personal computers. Using a split-screen format, a computer user can surf the Web while watching TV.

DTTV-SA (Digital Terrestrial Television – System Aspects)

DTV (Digital Television) – a) A term used for all types of digital television including High Definition Television and Standard Definition Television. **b)** Another acronym for the new digital television standards. **c)** The technology enabling the terrestrial transmission of television programs as data. See HDTV.

DTV Team – Originally Compaq, Microsoft and Intel, later joined by Lucent Technology. The DTV Team promotes the computer industry's views on digital television, namely, that DTV should not have interlace scanning formats but progressive scanning formats only. (Intel, however, now supports all the ATSC Table 3 formats, including those that are interlace, such as 1080i.)

DTVB (Digital Television Broadcasting)

DTVC (Digital Television by Cable)

Dual Capstan – Refers to a transport system in which a capstan and pinchroller are used on both sides of the recording and playback head system.

Dual Channel Audio – A mode, where two audio channels are encoded within one bit stream. They may be played simultaneously (stereo) or independently (two languages).

Dub – a) A duplicate copy made from one recording medium to another. **b)** To record or mix pre-recorded audio or video from one or more sources to a another source to create a single recording. See also, Bump-Up.

Dubbing – a) In videotape production, the process of copying video or audio from one tape to another. **b)** In film production, the process of replacing dialog on a sound track. See also ADR, Foley.

Dubmaster – A second-generation copy of a program master used for making additional preview or distribution copies, thereby protecting the master from overuse.

Dubs – Copies of videotape.

Dupe – To duplicate. A section of film or video source footage that has been repeated (duplicated) one or more times in an edited program.

Dupe List – A sublist of duplicated clips of film requiring additional prints or copies of negative for film finishing. See also Cut List.

Dupe Reel – A reel designated for the recording and playback of dupes (duplicate shots) during videotape editing.

Duplex – A communication system that carries information in both direction is called a duplex system. In CCTV, duplex is often used to describe the type of multiplexer that can perform two functions simultaneously, recording in multiplex mode and playback in multiplex mode. It can also refer to duplex communication between a matrix switcher and a PTZ site driver, for example.

Duplication – The reproduction of media. Generally refers to producing discs in small quantities, as opposed to large-scale replication.

Durability – Usually expressed as a number of passes that can be made before a significant degradation of output occurs; divided by the corresponding number that can be made using a reference tape.

Duration – Length of time (in hours, minutes, seconds and frames) that a particular effect or section of audio or video material lasts.

DV (Digital Video) – This digital VCR format is a cooperation between Hitachi, JVC, Sony, Matsushita, Mitsubishi, Philips, Sanyo, Sharp, Thomson and Toshiba. It uses 6.35 mm (0.25-inch) wide tape in a range of products to record 525/60 or 625/50 video for the consumer (DV) and professional markets (Panasonic's DVCPRO, Sony's DVCAM and Digital-8). All models use digital intra-field DCT-based "DV" compression (about 5:1) to record 8-bit component digital video based on 13.5 MHz luminance sampling.

dv_export – An export mode in Adobe Premiere that enables digital video to be exported through a capture card.

DV25 – The most common form of DV compression. DV25 uses a fixed data rate of 25 megabits per second.

DVB (Digital Video Broadcasting) – Broadcasting TV signals that comply with a digital standard.

DVB-C (Digital Video Broadcasting – Cable) – Broadcasting TV signals that comply with a digital standard by cable (ETS 300 429).

DVB-CA – Support for use of scrambling and conditional access (CA) within digital broadcasting systems (ETR 289).

DVB-CI – Common interface specification for conditional access and other digital video broadcasting decoder applications (EN 50221).

DVB-Cook – A guideline for the use of DVB specifications and standards (TR 101 200).

DVB-CS – Digital video broadcasting baseline system for SMATV distribution systems (ETS 300 473).

DVB-Data – Specification for Data Broadcasting (EN 301 192).

DVB-DSNG – Digital satellite news gathering (DSNG) specification (EN 301 210).

DVB-IRD (Digital Video Broadcasting Integrated Receiver Decoder)– A receiving decoder that can automatically configure itself using the MPEG-2 Program Specific Information (PSI).

DVB-IRDI – Interface for DVB-IRDs (EN 50201).

DVB-M – Measurement guidelines for DVB systems (ETR 290).

DVB-MC – Digital video broadcasting baseline system for multi-point video distribution systems below 10 GHz (EN 300 749).

DVB-MPEG – Implementation guidelines for the use of MPEG-2 systems, video and audio in satellite, cable and terrestrial broadcasting applications (ETR 154).

DVB-MS – Digital video broadcasting baseline system for multi-point video distribution systems at 10 MHz and above (EN 300 748).

DVB-NIP – Network-independent protocols for DVB interactive services (ETS 300 802).

DVB-PDH – DVB interfaces to plesiochronous digital hierarchy (PDH) networks (ETS 300 813).

DVB-PI – DVB-PI (EN 50083-9) describes the electrical, mechanical and some protocol specification for the interface (cable/wiring) between two devices. DVB-PI includes interfaces for CATV/SMATV headends and similar professional equipment. Common interface types such as LVDS/SPI, ASI and SSI are addressed.

DVB-RCC – Interaction channel for cable TV distribution system (CATV) (ETS 300 800).

DVB-RCCL (Return Channel for Cable and LMDS Digital Television Platform) – An older cable standard that used to compete with DOCSIS.

DVB-RCCS – Interaction channel for satellite master antenna TV (SMATV) distribution systems. Guidelines for versions based on satellite and coaxial sections (TR 101 201).

DVB-RCDECT – Interaction channel through the digital enhanced cordless telecommunications (DECT) (EN 301 193).

DVB-RCL – Interaction channel for local multi-point distribution system (LMDS) distribution systems (EN 301 199)

DVB-RCS (Return Channel for Satellite Digital Television Platform) – DVB-RCS is a satellite standard.

DVB-RCT (Return Channel for Terrestrial Digital Television Platform) – Interaction channel through public switched telecommunications network (PSTN)/integrated services digital networks (ISDN) (ETS 300 801).

DVB-S (Digital Video Broadcasting – Satellite) – For broadcasting TV signals to a digital standard by satellite (ETS 300 421).

DVB-SDH – Interfaces to synchronous digital hierarchy (SDH) networks (ETS 300 814).

DVB-SFN – Mega-frame for single frequency network (SFN) synchronization (TS 101 191).

DVB-SI (Digital Video Broadcasting – Service Information) –
a) Information carried in a DVB multiplex describing the contents of different multiplexes. Includes NIT, SDT, EIT, TDT, BAT, RST, and ST.
b) The DVB-SI adds the information that enables DVB-IRDs to automatically tune to particular services and allows services to be grouped into categories with relevant schedule information (ETS 300 468).

DVB-SIM – DVB SimulCrypt. Part 1: headend architecture and synchronization (TS 101 197).

DVB-SMATV – DVB satellite master antenna television (SMATV) distribution systems (EN 300 473).

DVB-SUB – DVB subtitling systems (ETS 300 743).

DVB-T (Digital Video Broadcasting – Terrestrial) – Terrestrial broadcasting of TV signals to a digital standard (ETS 300 744).

DVB-TXT – Specification for conveying ITU-R system B teletext in DVB bitstreams (ETS 300 472).

DVC – See Digital Video Cassette.

DVCAM – Sony's development of native DV which records a 15 micron (15 x 10 6 m, fifteen thousandths of a millimeter) track on a metal evaporated (ME) tape. DVCAM uses DV compression of a 4:1:1 signal for 525/60 (NTSC) sources and 4:2:0 for 625/50 (PAL). Audio is recorded in one of two forms – four 12-bit channels sampled at 32 kHz or two 16-bit channels sampled at 48 kHz.

DVCPRO P – This variant of DV uses a video data rate of 50 Mbps – double that of other DV systems – to produce a 480 progressive frames. Sampling is 4:2:0.

DVCPRO50 – This variant of DV uses a video data rate of 50 Mbps – double that of other DV systems – and is aimed at the higher quality end of the market. Sampling is 4:2:2 to give enhanced chroma resolution, useful in post-production processes (such as chroma-keying). Four 16-bit audio tracks are provided. The format is similar to Digital-S (D9).

DVCPROHD – This variant of DV uses a video data rate of 100 Mbps – four times that of other DV systems – and is aimed at the high definition EFP end of the market. Eight audio channels are supported. The format is similar to D9 HD.

DVCR – See Digital Video Cassette Recorder.

DVD (Digital Video Disc) – A new format for putting full length movies on a 5" CD using MPEG-2 compression for "much better than VHS" quality. Also known as Digital Versatile Disc.

DVD Forum – An international association of hardware and media manufacturers, software firms and other users of digital versatile discs, created for the purpose of exchanging and disseminating ideas and information about the DVD Format.

DVD Multi – DVD Multi is a logo program that promotes compatibility with DVD-RAM and DVD-RW. It is not a drive, but defines a testing methodology which, when passed, ensures the drive product can in fact read RAM and -RW. It puts the emphasis for compatibility on the reader, not the writer.

DVD+RW (DVD Rewritable) – Developed in cooperation by Hewlett-Packard, Mitsubishi Chemical, Philips, Ricoh, Sony and Yamaha, it is a rewritable format that provides full, non-cartridge, compatibility with existing DVD-Video players and DVD-ROM drives for both real-time video recording and random data recording across PC and entertainment applications.

DVD-10 – A DVD format in which 9.4 gigabytes of data can be stored on two sides of a two-layer disc.

DVD-18 – A DVD format in which 17.0 gigabytes of data are stored on two sides of the disc in two layers each.

DVD-5 – A DVD format in which 4.7 gigabytes of data can be stored on one side of a disc in one layer.

DVD-9 – A DVD format in which 8.5 gigabytes of data can be stored on one side of a two-layer disc.

DVDA (DVD Association) – A non-profit industry trade association representing DVD authors, producers, and vendors throughout the world.

DVD-A (DVD Audio) – DVDs that contain linear PCM audio data in any combination of 44.1, 48.0, 88.2, 96.0, 176.4, or 192 kHz sample rates, 16, 20, or 24 bits per sample, and 1 to 6 channels, subject to a maximum bit rate of 9.6 Mbps. With a 176.4 or 192 kHz sample rate, only two channels are allowed. Meridian Lossless Packing (MLP) is a lossless compression method that has an approximate 2:1 compression ratio. The use of MLP is optional, but the decoding capability is mandatory on all DVD-Audio players. Dolby Digital compressed audio is required for any video portion of a DVD-Audio disc.

DVD-Interactive – DVD-Interactive is intended to provide additional capability for users to do interactive operation with content on DVDs or at Web sites on the Internet. It will probably be based on one of three technologies: MPEG-4, Java/HTML, or software from InterActual.

DVD-on-CD – A DVD image stored on a one-sided 650 megabyte CD.

DVD-R (DVD Recordable) – a) A DVD format in which 3.95 gigabytes of data are stored on a one-sided write-once disc. **b)** The authoring use drive (635nm laser) was introduced in 1998 by Pioneer, and the general use format (650nm laser) was authorized by DVD Forum in 2000. DVD-R offers a write-once, read-many storage format akin to CD-R and is used to master DVD-Video and DVD-ROM discs, as well as for data archival and storage applications.

DVD-RAM (DVD Random Access Memory) – A rewritable DVD disc endorsed by Panasonic, Hitachi and Toshiba. It is a cartridge-based, and more recently, bare disc technology for data recording and playback. The first DVD-RAM drives were introduced in Spring 1998 and had a capacity of 2.6GB (single-sided) or 5.2GB (double sided). DVD-RAM Version 2 discs with 4.38GB arrived in late 1999, and double-sided 9.4GB discs in 2000. DVD-RAM drives typically read DVD-Video, DVD-ROM and CD media. The current installed base of DVD-ROM drives and DVD-Video players cannot read DVD-RAM media.

DVD-ROM (DVD Read Only Memory) – a) DVD disks for computers. Expected to eventually replace the conventional CD-ROM. The initial version stores 4.7 GB on one disk. DVD-ROM drives for computers will play DVD movie disks. **b)** The base format of DVD. ROM stands for read-only memory, referring to the fact that standard DVD-ROM and DVD-Video discs can't be recorded on. A DVD-ROM can store essentially any form of digital data.

DVD-RW (DVD Rewritable) – A rewritable DVD format, introduced by Pioneer, that is similar to DVD+RW. It has a read-write capacity of 4.38 GB.

DVD-V (DVD Video) – a) Information stored on a DVD-Video can represent over an hour or two of video programming using MPEG video compressed bit streams for presentation. Also, because of navigation features, the programming can be played randomly or by interactive selection. **b)** DVDs that contain about two hours of digital audio, video, and data. The video is compressed and stored using MPEG-2 MP@ML. A variable bit rate is used, with an average of about 4 Mbps (video only), and a peak of 10 Mbps (audio and video). The audio is either linear PCM or Dolby Digital compressed audio. DTS compressed audio may also be used as an option. Linear PCM audio can be sampled at 48 or 96 kHz, 16, 20, or 24 bits per sample, and 1 to 8 channels. The maximum bitrate is 6.144 Mbps, which limits sample rates and bit sizes in some cases. **c)** A standard for storing and reproducing audio and video on DVD-ROM discs, based on MPEG video, Dolby Digital and MPEG audio, and other proprietary data formats.

DVE Move – Making a picture shrink, expand, tumble, or move across the screen.

DVE Wipe – A wipe effect in which the incoming clip appears in the form of a DVE similar to those you create with the DVE tool.

DVE™ (Digital Video Effects) – a) These effects are found in special effects generators which employ digital signal processing to create two or three dimensional wipe effects. DVE generators are getting less expensive and the kind of effects they create getting more popular. The Digital Video Mixer includes such effects. **b)** A "black box" which digitally manipulates the video to create special effects, for example, the ADO (Ampex Digital Optics) system. Common DVE effects include inverting the picture, shrink-

ing it, moving it around within the frame of another picture, spinning it, and a great many more.

D-VHS (Digital – Video Home System) – Digital video recording but based on conventional VHS recording technology. It can record broadcasted, (and typically compressed) digital data, making it compatible with computers and digital televisions, but it still is also compatible with existing analog VHS technology.

DVI – See Digital Video Interactive.

DV-Mini (Mini Digital Video) – A new format for audio and video recording on small camcorders, adopted by the majority of camcorder manufacturers. Video and sound are recorded in a digital format on a small cassette (66_48_12 mm), superseding S-VHS and Hi 8 quality.

DVS (Descriptive Video Services) – Descriptive narration of video for blind or sight-impaired viewers.

DVTR (Digital Video Tape Recorder)

Dye Polymer – The chemical used in DVD-R and CD-R media that darkens when heated by a high-power laser.

Dye Sublimation – Optical disc recording technology that uses a high-powered laser to burn readable marks into a layer of organic dye. Other recording formats include magneto-optical and phase-change.

Dynamic Gain Change – This distortion is present when picture or sync pulse luminance amplitude is affected by APL changes. This is different from APL induced Transient Gain Distortions which only occur at the APL change transition time, rather this distortion refers to gain changes that occur after the APL has changed. The amount of distortion is usually expressed as a percent of the amplitude at 50% APL, although sometimes the overall variation in IRE units is quoted. This is an out of service test. This distortion causes picture brightness to seem incorrect or inconsistent as the scene changes.

Dynamic Gain Distortion – One of several distortions (long-time waveform distortions is another) that may be introduced when, at the sending end of a television facility, the average picture level (APL) of a video signal is stepped from a low value to a high value, or vice versa, when the operating point within the transfer characteristic of the system is affected, thereby introducing distortions on the receiving end.

Dynamic Memory – Memory devices whose stored data must be continually refreshed to avoid degradation. Each bit is stored as a charge on a single MOS capacitor. Because of charge leakage in the transistors, dynamic memory must be refreshed every 2 ms by rewriting its entire contents. Normally, this does not slow down the system but does required additional memory refresh logic.

Dynamic Metadata Dictionary – The standard database of approved, registered Metadata Keys, their definitions, and their allowed formats.

Dynamic Mike – A mike in which the diaphragm moves a coil suspended in a magnetic field to generate an output voltage proportional to the sound pressure level.

Dynamic Range – a) A circuit's signal range. **b)** An audio term which refers to the range between the softest and loudest levels a source can produce without distortion. **c)** The difference, in decibels, between the overload level and the minimum acceptable signal level in a system or transducer. d) The ratio of two instantaneous signal magnitudes, one being the maximum value consistent with specified criteria or performance, the other the maximum value of noise. e) The concept of dynamic range is applicable to many measurements beyond characterization of the video signal, and the ratios may also be expressed as f stops, density differences, illumination or luminance ratios, etc.

Dynamic Range Compression – a) Level adjustment applied to an audio signal in order to limit the difference, or range of the loudest to the softest sounds. **b)** A technique of reducing the range between loud and soft sounds in order to make dialogue more audible, especially when listening at low volume levels. Used in the downmix process of multichannel Dolby Digital sound tracks.

Dynamic Range, Display – The range of luminances actually achieved in a display. The system's overall transfer function is the most informative specification of dynamic range, inasmuch as nonlinear processing has nearly always been applied to the luminance of the reproduced scene. Frequently, however, the dynamic range, display is estimated by observing the reproduction of a stepped gray-scale having calibrated intervals. Conventionally, the dynamic range is reported to include every step whose transition can be detected, no matter how miniscule. Human vision is less adept at judging luminance of extended areas, but particularly sensitive to luminance transitions which may even have been exaggerated by edge enhancement. "Resolved steps" may be reported, therefore, even when the perceived luminance difference between the areas of adjacent steps is not obvious.

Dynamic Range, Image Capture – The range of luminances actually captured in the image is defined and limited by the transfer function which is usually nonlinear. Capture and recording systems traditionally limit their linear response to a central portion of their dynamic range, and may have extended nonlinear shoulder and toe regions. For any scene, it is usually possible to place the luminances of interest on a preferred portion of the transfer function, with excursions into higher and lower limits rolled off or truncated by the respective shoulder and toe of the curve.

Dynamic Resolution – The amount of spatial resolution available in moving pictures. In most television schemes, dynamic resolution is considerably less than static resolution. See also Motion Surprise, Spatial Resolution, and Temporal Resolution.

Dynamic Rounding – The intelligent truncation of digital signals. Some image processing requires that two signals are multiplied, for example in digital mixing, producing a 16-bit result from two original 8-bit numbers. This has to be truncated, or rounded, back to 8-bits. Simply dropping the lower bits can result in visible contouring artifacts especially when handling pure computer generated pictures. Dynamic rounding is a mathematical technique for truncating the word length of pixels, usually to their normal 8-bits. This effectively removes the visible artifacts and is non-cumulative on any number of passes. Other attempts at a solution have involved increasing the number of bits, usually to 10, making the LSBs smaller but only masking the problem for a few generations. Dynamic rounding is a licensable technique, available form Quantel and is used in a growing number of digital products both from Quantel and other manufacturers.