



Multimedia & Design Jargon Buster

The Source for Multimedia and Design Terms and Acronyms

Accelerator card (or board)

A printed-circuit board that speeds up part or all of a computer's throughput. Some accelerators replace the CPU in a computer completely with a CPU that has a faster clock speed. Others create a CPU cache which holds the most recent data transferred between RAM memory and the CPU. Certain accelerators are function-specific, such as graphic accelerators and sound accelerators.

ActiveX

Microsoft's answer to *Java*, and a hub of controversy over security. ActiveX 'applets' undermine what we expect from applets, because they can be written to do just about anything that takes a programmer's fancy.

AIFF or Audio Interchange File Format

A standard audio file format supported by applications on the Macintosh and Windows computers.

Aliasing

A by-product of digitising audio or video is the quantizing of smooth analogue waveforms into discrete sharp steps. In images, this results in a distortion of previously smooth diagonal or curved lines, into jagged lines where you can see the sharp corners of pixels. See "*anti-aliasing*."

Alpha channel

In the Macintosh 32-bit QuickDraw colour model, 24 of the bits are used for three colour channels (8-bits each for Red, Green and Blue.) These "channels" refer to how the information for the separate red, green and blue components of each pixel of an image are manipulated throughout the computer. The remaining 8-bits of the 32-bit colour scheme are reserved for an alpha channel. The alpha channel may be used by software developers and manufacturers of hardware components as they see fit. This gives them 8 additional bits of information which can be used for each pixel of the image. Typical uses for the alpha channel are: to overlay 8-bits of animation on top of a 24-bit video signal being passed through a video special effects card. In a colour image enhancement program, the alpha channel may be used to allow you to mask part of the image from being painted upon by accident (a technique called "frisket" in graphic arts.) In the Macintosh 16-bit colour model, 5 bits each are used for the red, green and blues primary colour channels. And 1-bit is reserved for an alpha channel. See *Mask*

Amplitude

The height of a waveform. The amplitude indicates the strength or loudness of a sound.

Anti-aliasing

In computer graphics, any software or user technique that averages pixel values between an image boundary and the surrounding background colour. Pixel corners are noticeable on diagonal and curved lines, when the line colour is in high contrast to the background colour. If you average adjacent pixel values, there is a loss of detail that the eye sees as a blurring effect. By blurring high-contrast boundary lines with the background colour, the eye is fooled into seeing the outline of the image as smoother.

Applet

A mini application run over the Internet, typically in *Java*, which is usually dedicated to doing just one specific job - such as putting a changing image on a page with a different *link* for each change. Formally, an applet should have no access to files on your system, to serial devices on your computer, or to other computers other than the *server* it was sent from. It's a safer way to have a small program run on your computer. Compare with '*script*'.

Argument

Information that a function needs to do its job. When written, an argument is enclosed in parentheses.

Artefact

Unwanted leftovers of compression or other digital manipulation. See *Blockiness*, *Tearing*.

Asset

Term for all the constituent media files (such as text, graphics, sounds, movies) that make up a multimedia application.

Audio

Sound, in *multimedia* lingo. Used more specifically for file formats that code the waveform of sound or music, like WAV, AU and MP3 - think of it like a bitmap for sound. These formats are much slower to *download* over the internet than MIDI, but you know that what you hear is exactly what your listener will hear.

Audio co-processor

A printed-circuit card that digitises audio for use in a computer, but also contains its own CPU, allowing fast compression and expansion of audio into data files onto a hard disc, so storage and playback of audio can take place in real time.

Audio digitiser

A device (either a box or printed-circuit card) for translating an analogue audio signal into digital binary numbers representing the waveform, usable by a computer. Most digitisers for Macintosh use heretofore, have been lower fidelity than CD sound because of limitations of Mac throughput. With a sampling rate of 22 khz, for example, the frequency response would be only 11 khz-about what an AM-band radio provides. This is why using an audio co-processor board, an external CD player, or SMPTE striped sweetening in post-production may be a better solution for Multimedia purposes.

AVI

Windows-based digital *video* format. It's fairly bulky, so not good on the *internet* for anything longer than a few seconds. MPEG is a better option for lengthy stuff on the internet.

Bandwidth

The capacity of an electronic signal to carry information. Bandwidth of a digital signal is measured in bits-per-second. Bandwidth of analogue signals is measured in hertz, kilohertz, or megahertz. A hertz is a unit of measurement meaning one cycle of alternating current per second. The bandwidth of signals may be wide or narrow, and is a limiting factor in the transmission of information. Standards committees such as the National Television Standards Committee (NTSC) define the bandwidth and composition of analogue composite video transmissions, and are working toward a definition of new standards and bandwidths for digital video transmissions. Such bandwidths are indirectly a reflection of the limits of technology for a particular era. They also reflect the compromises made to accommodate compatibility between older and newer technologies. The NTSC standard is a case in point. It had to allow for compatible broadcasting of black & white as well as colour television, so as not to impact the installed user base of black and white viewers too rapidly.

Bandwidth (internet)

In short, how much 'stuff' can get down a line, how quickly. Usually quoted in bits per second, or bps. A 56k modem transfers data 56,000 bits per second (in theory at least). *Download* times are a bandwidth issue.

Bezier

A way of mathematically describing a curve, used by graphics programs such as Freehand and Illustrator.

Binary

Having two values in a numbering system, or two corresponding states in a electromagnetic device.

Bit depth

The number of bits per pixel a video card is capable of displaying.

Bit

Abbreviation for the mathematical concept of a "binary digit." In the binary number system only two digits (0 and 1) are used to represent all numbers. So this is the perfect number system to use for digital logic circuits. Digital circuits use only two electromagnetic states-on or off, magnetically polarised with a South or North orientation, etc. Since digital circuits are at regular intervals, either turned on at full potential, or completely off, this gives digital circuits resilience against noise and other signal interference (as opposed to analogue signals.)

Bitmap

Data in computer memory representing sequential pixels of the horizontal rows of an image. If each pixel of an image can be represented by one bit, then it is a monochrome image. Colour images require more than one bit per pixel, hence they are stored as pixel maps. But the term "bitmap" is used casually to refer to a pixel map of any depth.

Bitmapped graphic

A graphic made from a matrix of pixels in horizontal rows, as opposed to an object-oriented graphic created from lines connecting co-ordinate points. A bitmapped graphic is best for animation, assuming it is to be animated at the same size on screen. This disadvantage of bitmapped graphics are that they distort when stretched or scaled up. Monochrome graphics distort badly unless scaled in even multiples of their original size.

Bleed

An undesirable oversaturation of colour-a by-product of distortion of the analogue Composite Video signal-which appears particularly on bright red colour values. One of the ways to make sure this does not happen is to use a palette of muted colours such as in the NTSC palette provided with Macromedia Director. (Not to be confused with the use of the term "bleed" in graphic arts to refer to a graphic which extends over a page gutter or margin.)

Blockiness

The consequence of portions of an image breaking into little squares due to over-compression or a video file overwhelming a computer's processor. *See Artefact.*

BMP (BitMaP)

Standard Windows graphics format: a bitmap, surprisingly enough. *See Bitmap.*

Bookmark

On the internet this is a *link* to a *URL* which you store in your *browser* or as a shortcut in a folder, for quick access to a *web page* or file without having to key in its *URL*, or go hunting for it on the Web. It's a bit like having an entry in an address book.

Boolean

In Boolean logic, the number 0 equals false, and any nonzero number (usually 1) equals true. You use these numbers in logical variables to store a value of true or false.

Bounding box

The smallest possible rectangular box that encloses a selected object.

Browser

A program you use to view *Web pages* or browse files - such as Internet Explorer and Netscape Navigator. Windows Explorer and Mac Finder are file browsers, and you can get similar looking applications, like Terrapin FTP, for browsing *ftp* sites, where you see the actual files on a site, rather than open them. You need one for managing the files on your *Website*

Bus

An electrical line for carrying data. In computers, lines carry both binary addresses for accessing data in memory, and the binary data itself. Busses may also be used to carry data in and out of the computer, such as the Macintosh NuBus.

Burn

Generating a CD-ROM on a specialised writer (sometimes called a CD-R); "burn" comes from the heat generated by the high-powered laser needed to make the pits.

Byte

A group of 8 bits (binary digits) which represent alphanumeric or coded values. This may be an instruction set for CPU operations, values of image pixels, values of digitised sound, or anything represented by up to 256 different elements in a set.

Camcorder

A device combining a video camera with a videocassette recorder. Two Sony analogue formats are currently in use: 8-mm (a Composite Video format), and Hi8 (an S-Video format that separates the luminance and chroma signals for improved picture fidelity).

Capture board (or card)

A printed-circuit board for capturing individual video frames, and storing them in a memory buffer, where they are digitised and saved on a hard disk. With 8-bit images the size of a 680 by 480 pixel screen, each frame may take up 300K. So obviously, it is not possible to store 30-frames a second in real time through RAM and onto a hard disk drive. (You would need throughput of 9 MegaBytes per second if you tried.) 24-bit image capture requires 900K per image. (You would need 27 MegaBytes per second if you tried this.)

Carrier frequency

The frequency at which an AM radio signal is broadcast, or the frequency around which the fluctuating carrier signals of FM or TV signals are centered. This is normally what people refer to as "the frequency" of a cablecast or broadcast transmission, such as "94.1 on your FM dial."

Carrier signal

transmission over a cable or via broadcasting, a carrier signal is the main channel of information. It is transmitted at or about the carrier frequency. Sometimes it is the only channel of information, as in the case of mono AM radio, or ham radio. In other types of transmission, several channels of information may ride piggyback as sub-carriers to the main carrier signal. For example, in ordinary composite video, the brightness signal carrying grayscale information is the main carrier signal. This signal is one which "black & white" receivers use exclusively. A sub-carrier of the main carrier is the chroma signal. Chroma identifies colour hues at a particular instant. Both carrier and sub-carrier signals are used by colour receivers. Additional audio sub-carriers provide the stereo sound and second aural program (SAP for foreign language simulcasting) for television. In FM stereo radio, the main carrier signal is a composite of both audio channels. The FM sub-carrier is a "sum and difference frequency" used to decode the main channel into left and right stereo sound channels. That way both mono FM receivers and stereo FM receivers can decode part or all of the transmission.

Cast

Macromedia Director term for the assets within a Director file called a movie.

CAV

Constant angular velocity (laserdisc format) - a system used by laserdisc players that can address individual frames of video. A CAV device, such as a record player, rotates at a constant speed, which means that the outside tracks must hold the same amount of data as the inner tracks. The only disadvantage of CAV is that only about half that length of a CLV video program can fit on a CAV disc.

CD Rewritables (or CD-RWs for short)

These use different discs form ordinary CD Writers, which work more like optical carts. The discs are coated with millions of metallic particles which, in their natural state, reflect light. However, if hit by a particular light frequency, they change their reflective properties. This is known as phase change, and it's reversible, meaning data can be written to a CD-RW, erased, and then different data written to it. Of course, you need a special CD-RW drive to do this, but such drives will also write to plain gold master Cds and read standard off-the-shelf Cds. CD rewritable discs are more expensive than plain gold masters, but a CD-RW disc will write up to around 1,000 times.

CD Writers

These write data onto gold master discs. The underside of these discs is coated with a special dye, which when hit by a particular light frequency emitted by a laser, turns an opaque green (some use a blue dye instead). When the gold master is put into an ordinary CD-ROM drive, the laser is reflected by clear areas on the disc and blocked by green areas.

CDEV

A Macintosh control panel (actually a software extension of the Macintosh system functionality.) Video boards and scanners may have a CDEV in order to change parameters of the device. Access to the software is from the Apple Menu.

CD-i

Phillips interactive CD format: never a hit in the consumer market, it is still used in training applications.

CD-ROM

A computer distribution medium—a form of single-sided 5" laser Compact Disc that contains Read-Only Memory, usually containing up to 660 megabytes of data. Graphic and animation files may be too large for diskettes, and so may benefit from such a format. The original CD-ROM drive (single-speed) could transfer 150K of data per second, a 2x (double-speed) can transfer 300K of data a second and a 4x (quad speed) can transfer 600K every second.

Channel

A discrete signal of information, usually one of several. In digital computer imagery and in professional component video, separate channels are used to carry information about the red, green, and blue components of information. The Macintosh 32-bit colour QuickDraw scheme also adds a fourth 8-bit channel called the alpha channel. Advantages of having separate channels of information is that interference or degradation of one component of the image will not necessarily affect the others. Composite video suffers from the disadvantage of having composited all channels containing brightness, colour, and sound information into one complicated signal. In storing, transmitting and decoding this one signal into its component parts, many problems arise which affect all channels of the signal.

Checked state

When a user clicks a button, it is in a checked--or enabled--state. You can specify the appearance of the button in this state, what sound it makes, and whether the button's label is hidden or visible.

Chip

An discrete electronic component used in printed circuits, made of a combination of semi-conductive substances and miniature connections between them, produced by a photochemical etching process, and encapsulated in plastic.

Chroma

The colour hue component of a Composite Video signal (as opposed to luminance which contains the saturation values.) In the NTSC and PAL standard systems, chroma is phase modulated on top of luminance as a higher sub-carrier in broadcast television.

Chroma-key

A technique used in video overlay and special effects boards. It enables the user to specify a colour palette value as a key colour. Wherever such a colour appears in the animation, a corresponding pixel of the video image will be inserted in its place.

CinePak

Apple CODEC used in QuickTime and elsewhere.

Clip

The source material for a movie. A clip can be a movie, a still image, or an audio file. In Adobe Premier, a clip is a pointer to a file stored on disk.

Clipping

What occurs when a sound's amplitude exceeds the quantization range. Clipping distorts a sound.

Clock rate

Refers to the system clock—a pulse generated from a timing circuit of the CPU which triggers system events throughout the digital computer. The clock rate of a particular model of computer can only be changed by replacing the CPU with a CPU accelerator card.

CLUT - Colour Look-Up Table

With 8-bit colour, it is a set of 256 colours used by the Mac operating system at any one time. A numeric indexing scheme allows the computer to refer to the colour of any pixel as to its position within the table.

CLV (Constant Linear Velocity)

By adjusting the motor speed to compensate for the head position, CLV devices make it possible to store the maximum amount of data on each track, which greatly increases storage capabilities. However, random access is much more difficult at variable motor speeds, resulting in slower access times. CLV laserdisc format is a system used by laserdisc players that has the ability to squeeze about twice the video on a disc than a CAV laserdisc. Its disadvantage is that it cannot address individual frames of video as a CAV laserdisc player can.

CODEC (COmpression DEcompression)

The process used by QuickTime and Video for Windows to make videos smaller for storage and expand them for display.

Colour cycling

A colour effect that steps through a defined range of colours. When colour cycling is applied to artwork, pixels that are the same colour as the colours in the defined range change colours as the defined range cycles.

Common palette

A palette that contains a representative sample of colours that permits artwork created with a variety of palettes to be displayed in colours that are as similar to the original colours as possible.

Colour resolution

In analogue composite video, because the chroma information is modulated on a separate sub-carrier frequency which has a lower bandwidth, there is a separate resolution (detail) of colour information than the brightness, or luminance signal. Typically colour resolution of composite video is only about 120 lines of horizontal resolution or less (12 dpi on a 13" monitor,) even though the brightness of the image has a higher horizontal resolution-typically between 16 and 43 dpi.

Component

a hardware component such as the computer, video camera, external device, or interface card.

Composite video

An analogue video transmission scheme which first extracts chroma information from luminance, and then modulates chroma onto a phase-shifted subcarrier of luminance for compatibility with black & white monitors. Both NTSC and PAL are Composite video standards.

Compositing

In 3D programs, compositing refers to how several layers of 3D models are combined into a particular frame of animation. For video sources with computer animation, it refers to overlay.

Compressed sound

A sound that has been altered so that it requires less memory. Compressing a sound reduces sound quality; generally, the higher the compression ratio, the lower the sound quality.

Compression

Shrinking file sizes. For the internet this will allow them to be downloaded faster. Uncompressed graphics, which define the colour of every pixel in an image, are pretty intensive and can take an age to download. So most graphics on the Internet are saved in either *GIF* or *JPEG* format, which have different ways of reducing the amount of information used to describe an image - inevitably, with some loss in image quality. You can compress *audio* and *video* too, with the *MPEG* format, for instance.

Configuration

A particular way to connect video components and other complementary hardware products with a computer, in order to create a multimedia solution.

Continuous-tone graphic (contone)

A graphic which is made up of continuously variable tones of colour or grayscale, as opposed to a halftone which uses a pattern of solid colour printer dots to simulate gray or other shades of colour. A photographic print is an example of a continuous tone graphic. A printed photo in a newspaper or magazine is halftoned (or screened.) Source documents used for scanning or digitising should be continuous tone photographic prints, as opposed to screened halftones. When you digitise a screened graphic, an undesirable moiré pattern could appear in the image.

Control-S, Control-L

These are a type of communication protocol used to control the motion of a camcorder or video recorder. They are typically used with consumer and industrial video devices. Certain software codes and electrical currents are specific to this protocol. Control-S is a "send" line, and Control-L is a "listen" line.

Controller board (or card)

A hardware device for translating data from a computer into digital or analogue signals for controlling functions of an external device. Such a device could be an audio or video player or recorder, an infrared modulator, etc.

Converter card

A hardware device for converting digitised data into an analogue output signal. Such a device is required for outputting digital images from a computer to video.

Cookie

A small nugget of information sent from a *website* to your *browser*, the idea being to hold onto it, and send it back when you're connected up to the same site again. Handy for storing visitors log-in information or viewing preferences.

CPU (Central Processor Unit)

This contains one or more chips that perform the main function of a computer to address memory, manipulate data, and handle data input and output. Timing, video circuits and memory are usually not included in the CPU.

D-1, D-2, and D-4

Digital video formats used by high-end professional production facilities.

DAC or Digital to Analogue Conversion

also known as Encoding. Required when outputting a signal from a computer to devices like analogue audio and video recorders, or analogue device controls.

DAT (Digital Audio Tape)

Standard digital recording medium; records at 48.1kHz.

Data fork

A part of a Macintosh file that contains information which is subject to change every time the document is opened or the application is used. This is in contrast to the resource fork which contain descriptions of things like cursors, icons, and menu items which change less frequently. Code for the procedural or structural part of an application program is also kept in resources in the resource fork.

Decibels (dB)

A unit for the measuring sound level differences.

DHTML (Dynamic HTML)

Dynamic HTML, or whizz-bang exciting stuff, for short. DHTML puts *HTML* to work with *scripts* to get some interactive action on your web pages, like *rollovers*, sliding text, etc. The principal is that all the action is coded into the web page - the page can change without the need for your visitor's *browser* to *download* any new data.

Digital video

A generic term that refers to QuickTime on a Macintosh and Video for Windows on a PC.

Digitise

To convert a sound from analogue to digital format.

Digitiser

A hardware device for converting analogue signals into binary numbers representing a sample of the original signal, which a computer can use. Usually digitisers are in the form of a printed circuit card for the Macintosh NuBus slot or a separate I/O box.

Direct colour

A colour scheme of displaying pixels which contain information about the levels of red, green, blue (the additive primary colours of light). This is contrasted with indexed colour, where a palette of colours is used, and each pixel of an image points to an index position number within the palette.

Display mode

A system mode that defines the number of colours or values of gray which can be displayed at any one time. The display mode is set using the Monitors control panel. The number of choices you have is dependent upon the monitor display card circuitry. Bitmapped images created when the display mode is set to a particular level will have the same pixel depth as the display mode. Images created in the 32-bit display mode will have the same number of pixels, although 8 of them are reserved for an alpha channel (for overlay and masking). So such images are called 24-bit images for the remaining number of bits. This is a direct colour mode, meaning that values of red, green, and blue are stored in each pixel. The 16-bit display mode allows images to be created with 15-bits of colour information and a 1-bit Alpha channel. It is also a direct colour mode. Display modes of 2-bits through 8-bits utilise Colour Look-Up Tables (also called palettes) to implement a scheme called Indexed colour. Pixels of bitmaps created in these modes will not refer to values of red, green and blue. Instead the image will incorporate a particular palette of colours to which it is "mapped," and an index number referring to a position within the palette. If the display mode is set to 1-bit, only black and white pixels are displayed and created within bitmaps. A technique called dithering involving a set of patterns to simulate grays allows some tones between black and white to be simulated. But 1-bit bitmapped images distort badly when scaled or rotated.

Display resolution

The detail of image display, expressed in dpi (dots-per-inch representing pixels per inch) for a particular display monitor. Another aspect of a monitor is its spatial resolution, expressed as the size of pixel map which can contain the image (640 x 480, etc.)

Distant light

A distant light shines in a definite direction from a source infinitely far away, illuminating all objects that face it. Distant light illuminates objects in a manner similar to sunlight.

Dither

To use patterns of fewer tonal values, in order to fool the eye into seeing more numerous tonal values at an appropriate distance. Examples: to use several patterns of black and white pixels in order to simulate several shades of gray, to use patterns of red and blue pixels to simulate various pinks and purples.

DLLs

Windows DLLs (dynamic link libraries) provide a way of linking to external functions that you call from within calculation icons.

Domain

A unique name for an internet site location, rather than for a file on a site. In www.HJLKJHKJH.co.uk, the domain is 'HJLKJHKJH.co.uk'. If yours was at www.msn.com/homepages/mysite, your domain name is - strictly speaking - 'msn.com', and 'homepages/mysite' is a folder within that domain.

Dot pitch

A measurement of the detail, or dot density, of a printer (usually dot-matrix) or that of a display screen. Dot pitch is measured in dpi (for dots-per-inch.)

Download

When you copy a file via a cable from one computer to another. To view a *web page*, you have to download the *HTML* and any other files it asks for - graphics, for instance, from a *web server*. You can download any kind of file or program onto your computer, and use it like a normal file, just like copying something from a floppy disk.

Downsampled sound

A sound that has been converted to a lower sampling rate. Downsampling a sound decreases the memory required to record and store the sound but also reduces sound quality.

DPI

abbreviation of dots-per-inch. Originally, a unit of measurement referring to the dot-pitch of dot-matrix printers. The term has been adapted to mean pixels-per-inch. In this context, dpi refers to three things: resolution of display monitor screens, images created within paint programs which assume the same resolution as the monitor screen, and images created from scanners. For animation, the resolution of images is assumed to be 72-dpi because that is the standard Macintosh monitor resolution. Scanned images which were scanned at a higher resolution will scale up in size when displayed on a monitor. The advantage of higher resolution scanning is specifically useful for printed output on medium-resolution and high-resolution laserprinters. For printed output, a bitmapped image which is 1-bit is printed as a black and white bitmap at the same resolution. On PostScript printers, any image with a pixel depth more than 1-bit will automatically invoke an algorithm for PostScript halftoning to be applied.

Dub

A copy of a video or audio product. Dubbing analogue signals is a regretful step since much is lost in the process due to distortion, reduced signal-to-noise ratio, increased dropouts and flutter with each generation of dub.

DVE (Digital Video Effects unit)

A high-end post-production studio device which can do a number of pre-programmed types of effects of high quality on video images. Such a machine is a state-of-the-art successor to the standard video switcher. Examples are DVEs made by Abekas and Grass Valley.

DVD (Digital Video Disc or Digital Versatile Disc as it's sometimes known)

Is basically the next generation CD-ROM. DVD discs are capable of storing immense quantities of information (up to 17Gb), which makes them ideal for storing complete movies - hence the name. The capacity is achieved in three ways Tracks on a DVD disc are much smaller than on a CD, so it's possible to pack as much as 4Gb onto a single side. DVD discs are double sided, and each side can have two layers. The outer layer is partially transparent so a higher power laser can read the layer beneath. Your CD-ROM drive won't read DVD discs, but a DVD drive will be able to read your current CD-ROMs.

Dynamic range

The difference between the loudest sound that can be recorded without clipping and the softest sound. 8-bit sounds have a dynamic range of 48 dB; 16-bit sounds have a dynamic range of 96 dB.

DXF (Drawing Exchange Format)

Industry standard 3D data format.

E-commerce

Trade that's undertaken electronically, such as via the internet. There are some concerns over security, since you have to give credit card details. However, Websites are increasingly guaranteeing safe transactions, a good example is www.amazon.com, who can also help you set up your own bookshop.

Encoder

An output card which converts one video signal into another signal (synonymous with converter card.)

ENG (Electronic News Gathering)

This refers to the type of camcorders used for TV news-usually with 3/4" professional video cassette formats like Betamax® U-Matic.

EPS (Encapsulated PostScript)

Standard means of bundling up PostScript files for a printer. Often mistakenly assumed to be a graphics interchange format. *See GIF.*

Erasable-Optical drives

A promising new type of random-access storage medium for computers utilising laserdiscs. An optical laser is used to write data, and a magnetic head reads the data. Capacity of such drives is around 600-800 megabytes per 5" laserdisc. Larger units are possible for discs up to 12".

Expression

A set of symbols that produces a result by evaluating or comparing values. You can use expressions in calculation windows and dialogue boxes, and you can embed them in text objects. You can use variables, functions, operators, numbers, character strings, constants, and comments in an expression.

Extruding

Extending the outline of a profile out into space along a line perpendicular to the profile. Extruding gives depth to two-dimensional profiles.

FM Synthesis effect

Generates frequency modulated signals. Use this effect to create sounds resembling a siren, buzzer, or bird chirping.

FMV (Full Motion Video)

Term given to supposedly full screen, TV frame-rate video in millions of colours. In practice almost anything that looks bigger than an original QuickTime movie is passed off as FMV.

Fourier transform

A mathematical operation that converts or transforms a sound into its frequency components.

FPU

An abbreviation for floating-point unit--a board containing a processing chip which accelerates calculation of floating-point numbers on a computer. Floating-point numbers are those which include decimal points and powers of ten.

Frame

The basic unit of information in television, video, and QuickTime movies. In North America, a normal clip plays at 30 frames per second (fps), in Britain it's 25.

Frame-per-frame recording

A mode of recording onto video tape from computer output, or from video overlaid with computer output. This mode may be necessary in the case of 24-bit images from a computer, or when shuttling back and forth to playback and record on the same recorder. It produces the highest-quality transfer from computer output to video.

Frequency

The number of waveform peaks or cycles that occur in one second. Frequency is often specified in hertz (Hz) or kilohertz (kHz).

ftp (File Transfer Protocol)

An alternative to *http* and *Gopher*. It's a way of logging into a site on the *internet*, and see the files and folders held there, rather than opening them. It's also the easiest way to transfer and manage the files you've got on your *website server* just as if they're in a folder on your hard drive, by using an *ftp browser*. An *ftp URL* has *ftp* instead of *http* at the front.

Function

A set of instructions that generates a unique output value, often based on the value of a particular variable. Functions perform actions on data and are always followed by arguments enclosed in parentheses.

Genlock

A synchronisation signal generated by certain video I/O cards and video effects cards so that frames recorded on an output video device will synchronise with the frames of the video playback device. For line-by-line synchronisation and other compensation to stabilise a picture, a device called a time-basecorrector is used (which see.)

GIF (Graphics Interchange Format)

Graphics format popular on the Web - limited to 256 colours but supports transparency without an alpha channel and animation. An excellent way of *compressing* graphics such as logos and buttons, which use areas of solid colour, rather than gradients. GIFs can also have transparent areas - good for cut-out graphics - and are a good format for simple animations. Compare to *JPEG*.

Gold Master

The last stage of CD-ROM production before release; derives from the colour of the discs used to burn CD-ROMs.

Gopher

An alternative to *http* and *ftp* that was popular on the WWW before *http* made it big with *hypertext*.

Gouraud shading

Tricky method of creating realistic shading by breaking an object into polygons and shading them individually/

Graphics co-processor board

A printed-circuit board containing a separate CPU and memory which speeds up the throughput of Macintosh QuickDraw graphic routines. It is mounted in a NuBus slot. Some graphic accelerators can speed up 8-bit QuickDraw routines, others 32-bit QuickDraw, and some do both.

Grayscale

An image comprised of a number of tones along the scale between black and white (including the extreme tones of black and white.) Grayscale is a particular type of monochrome image. If the image contains (and the monitor is set for) 4-bits, then 16 levels of gray (including black and white) are possible. If the monitor is set for 8 bits, then 256 shades of gray (including black and white) are possible.

Halftone scanning mode

On an image scanner, a mode which produces 1-bit bitmapped images, and averages pixel values over a certain area to produce a dither pattern. This pattern simulates gray shades, but reduces the detail of the image. The larger the dither matrix size, the more shades of gray can be represented, but the less detail is present from the original image. This mode was created for dot-matrix and non-postscript printing. This mode is not recommended for either printed PostScript output or screen display.

Halftone

A way of simulating gray shades using a matrix of regular black pixels which can be turned off and on. Halftone also implies that the image is for printed output, instead of on-screen display. Halftoning is a common technique in printing, where one prints in monochrome (usually black ink) as opposed to several gray shaded inks. Continuous-tone photos must be re-photographed through a linescreen, so that the resulting dot pattern can be printed (this process is called "screening"). The disadvantage to having printed source documents is that when one scans them on a scanner or captures them with a camera and digitising board, one may find that a moiré pattern has been generated. Moiré patterns may create undesirable, coarse patterns within the image. So, scanning requires continuous-tone (contone) photographs as source documents. A rule of thumb when scanning for printed output is to scan at a resolution in dpi that is twice the desired PostScript® halftone linescreen. Half-toning should not be used when scanning for screen display since the screen will display the bitmap at 72 dpi. So, for screen display, scanning resolution should be set as close to 72 dpi as possible, unless you want the image to scale up in size. See also "dither", "halftone scanning mode", "continuous-tone".

Hard Drives

Hard drives work rather like a cross between a record player and a tape recorder. Inside the unit, in an airtight case, spins a circular disc (called a platter) which is coated in tiny magnetic particles arranged in tracks. Above the platter, floating on a cushion of air mere thousandths of an inch thick, are the read/write heads. These are connected to a mechanical arm which can position the heads over any track across the radius of the disc.

The heads write data to the disk by passing an electrical signal through a tiny electromagnetic coil which generates an equally tiny magnetic field. This field polarises the particle below the head to either positive or negative depending on whether the equivalent computer bit should be one or zero. Reading the data back is done in reverse: the magnetic particle on the platter induces an electrical current in the coil, which is then amplified and turned back into data that your machine can understand. Since hard discs have to be assembled in a clean room (even minuscule particle of dust hitting the read/write heads could destroy complete tracks of data), it's an expensive process, so engineers try to pack as much in as possible. Most hard discs have at least two platters, which can hold data on both sides.

Hidden wire

A rendering style in which the edges of an object are drawn as lines; enclosed and obscured surfaces are hidden.

Homepage

The first page on a web site that you come to, usually. It's a starting point for visitors, a contents and cover page all-in-one, and a place for *links* around a site. Every site should include a link back to the homepage on every page, and the file is usually called index.html. 'Homepage' is also used to mean the site your browser automatically opens to, or a private individual's own Web page.

Hot object

A text or graphic object that acts like a button when a user clicks it.

Hot spot

An area on the screen that acts like a button when a user clicks it.

Hours:Minutes:Seconds:Frames

The standard used to describe the duration of a video clip in terms of Hours:Minutes:Seconds:Frames. With a timebase set to 30 frames per second, a clip duration of 00:06:51:15 indicates that a clip plays for 6 minutes and 51.5 seconds.

HTML (HyperText Markup Language)

The basic language used to code *Web pages*. The idea is you put bits of code around your text to say how it should appear, and with what *links* and *multimedia*. A markup language literally 'marks up' information - in the case of the Web, mostly text and figures - to say a bit more about what it is, or should be done with it. See *hypertext and compare XML*.

HTTP (HyperText Transfer Protocol)

The way a Web browser and the server computer delivering Web pages communicate.

Hypertext

Hot text connected to a navigation link. It allows the user to navigate from one part of a piece to another. For example, the user might click a topic that's mentioned on the screen to go to the section that covers the topic in detail. It can also be treated like 'living text', which you can click on to do something - such as link to another page or to a file for downloading on the internet.

Hz (Hertz)

The number of times something happens a second. European PAL displays 50 fields a second, so it has a 50Hz frame rate, DAT samples 16-bit sound 48,000 times a second, so runs at 48kHz.

Image capture

Digitising a video source and saving it in a graphic file format. This is a slower (and older) method than Frame Grabbing. Capture boards were the first video input devices for the Mac. Image Capture is not done in real time. It can take from 1 to 30 seconds to digitise the image and save it on disk. Frame Grabbing is the same thing done in real time, where up to several frames can be put into RAM for later use.

Imaging models

Any system for encoding images used for electronic display. Although early efforts included the vector-based models used in Radar & CAD system displays, most digital computers as well as video are raster-based. A raster is an optical illusion of a screen created by a series of scan lines on the surface of a cathode-ray-tube. The persistence of phosphor dots on the surface, combined with the persistence of our vision, create the illusion of the raster. The primary imaging models now in use are: RGB (used by digital computers and Component Video), and Composite Video (used in analogue video.)

In-between

A feature of Macromedia Director that simplifies the animator's task by filling in the frames between the beginning location and the end location of an animation sequence. In-Between is also used for extending held artwork, and sliding (and stretching) artwork between the points. This feature is available in the score menu.

Indexed colour

A colour scheme where a palette of colours is used and each pixel of an image points to an index position number within the palette in order to select what colour is displayed. This is in contrast to the direct colour scheme, where actual values of the additive primary colours red, green and blue are stored in each pixel. Indexed colour is useful when a limited number of colours are available due to fewer bits per pixel in the image.

Infrared controllers

External hardware devices which can substitute for the mouse on a Macintosh. Another type of infrared device controller can send signals to remote-controlled video players and audio CD players, and can interface with a Macintosh using Macromedia products.

Inks

Permit you to control the appearance of artwork. Inks can range from transparent to opaque. Inks also permit you to reverse white and black, create ghost images, change solid black regions to any pattern, and create other effects.

Intensity

The brightness of a light source, controlled by the Intensity slider in the Light Browser. The higher the intensity value, the brighter the light.

Interactive movies

A Macromedia Director movie that uses Lingo scripts to provide the user or live presenter a way of controlling the pace, branching, input and output of data, video, and sound, plus other aspects of a presentation. This is one way computer multimedia is distinguished from older forms of multimedia and audio-visual communications, which were only able to control the relative pace of a presentation.

Interface card (or box)

A printed-circuit card for communicating with an external device, usually it is a NuBus slot card. Sometimes it is a separate external I/O box with a SCSI port connection. An example would be in the case of a scanner which has a interface box to convert output from serial to the parallel SCSI port (and speed up data transfer from the scanner.)

Interfacing (of hardware)

The way in which you connect peripheral devices to communicate with a computer. Some ways include special cables between connectors on the device and serial or SCSI ports on the Macintosh. You may also have to connect to the back of a NuBus card or through a separate box which connects to a port.

Interlaced (of GIFS)

Image that is displayed progressively by rendering lines out of sequence, like venetian blinds.

Internet

A group of computer networks connected together, which evolved from ARPANet of the late 60s and early 70s. Some say ARPANet was developed to keep communications going in the advent of nuclear war. Nevertheless, don't confuse your Internet with your World Wide Web (WWW).

Intranet

An internal network between computers, independent of the *Internet*. Intranets can also be connected into other networks, like the Internet.

Java

Sun Microsystems object oriented programming language, designed for networked systems such as the Web. The programming language is devised to do anything you can normally do with a language, but in a virus-safe manner. So it's popular on the Internet, and JavaScripts - *see scripts and applets* - can be used to do a lot of great stuff on *web pages* that can't be done with *HTML*.

JavaScript

Uncompiled scripting language, developed by Netscape and Sun Microsystems, that integrates with HTML to enhance interactivity. Nothing directly to do with Java, despite the name.

JPEG (Joint Photographic Experts Group)

Compression scheme for pictures; JPEG works by throwing away the least significant parts of an image, and is therefore lossy. Ideal for compressing photos, but begins to look a bit raggy if you *compress* things too much. Better than *GIF* for images with lots of colours and graduations. *See Lossy*.

Key

An electronic version of the film technique of matte. A key is a specific colour or brightness value which is used to trigger replacement of one image with another. This replacement is on a pixel-for-pixel basis. Video producers call this an "insert" into one picture by a second one. In computer graphics, this effect is described as an "overlay" since animation may be seen to be on top of live video.

Keyframe

Most video compression schemes work by taking keyframes at certain intervals, and working out the differences between that frame and the following frames. This means that it need only store small pieces of information about each frame in order to reconstruct the whole thing.

Key-light

The main source of illumination for film or video production. This light is usually a "hard" source of light such as that provided by a spotlight with a Fresnel lens. It gives definition to the shapes of things, and suggests a time of day or mood. Typically such a light is positioned above and about a 45° angle to the line of view between the camera and subject. On the other side of this line of view is the fill-light from a diffused source like a flood-light. Fill-light is typically placed on the opposite side of the line of view, and below it, to offset shadows created by the key-light. The ratio of brightness between key-light and fill-light is usually 4:1 for motion picture production and 2:1 for video production. Other light sources on a set are: The back-light which matches the key-light for brightness, and shines from above and behind the line between camera and subject. The back-light separates the outline of the subject from the background with a highlight. The background light is used to simulate ambient light on the backdrop or set, and is from various light sources as needed. An eye-light is sometimes mounted on the camera itself to give sparkle to eyes during closeups. These light sources may be replicated in a 3D scene description for the same reasons as in a real-life scene.

Kiosk

A standalone multimedia presentation, such as the listening booths found in large record shops, or interactive systems found in museums.

Large-screen monitor

A computer display monitor or video monitor above 25" in diagonal size. Some large-screen monitors also have a multi-scan feature allowing them to switch between different video standards and RGB (computer output.)

Laserdisc (or laser videodisc)

An analogue video storage device with read-only capability. There are two formats for wide use: CAV and CLV (which see.) The standard size is 12" although some videodiscs as small as 3" have been made.

Lathing

Rotating a 2D profile around a defined axis.

Line-art scanning mode

A mode which creates 1-bit bitmapped images consisting of black and white pixels only. A superior technique is grayscale scanning.

Lingo®

An authoring language for making Macromedia Director movies interactive. Lingo makes it possible to have more efficient movies by creating scripts to automate some repeated functions in animation.

Link

What makes the Web go round: a connection attached to some text, a graphic or whatever, so that when you click on it, you are taken to another page on the Web, to another place in the same page, or to a file which you can copy to your computer. It's actually much more important than it might sound.

Local light

A light that radiates uniformly in all directions. Local light strikes surrounding objects at different angles, similar to the way a light bulb illuminates objects in a room.

Loopback

A portion of a sound that is repeated over and over again when the sound is played. You can use a loopback to increase the duration of a sound without increasing the size of the sound.

Lossless

A way of compressing data without losing any information; formats such as GIF are lossless.

Lossy

A way of compressing by throwing away data; this leads to much smaller file sizes than lossless compression, but at the expense of some artefacts. *See JPEG, Psycho-acoustic masking.*

Luminance resolution

The resolution of the luminance or brightness component of a Composite Video signal. In common usage, luminance resolution is referred to as horizontal resolution although this is misleading. Actually, luminance is but one component of the horizontal scan line of a colour signal. The other component is called chroma. Chroma represents the colour subcarrier information. Since the eye has a lower capacity for colour detail than for brightness detail, the chroma signal has a smaller bandwidth, and yields fewer lines of resolution-typically about 1/3 the detail per horizontal line.

Luminance-key

A technique used in video overlay and special effects boards. It enables the user to specify a threshold value of pixel brightness as a key value. Wherever such a value appears in a pixel of the animation, a corresponding pixel of the video image will be substituted. Therefore, black or a dark shade of any colour may trigger luminance-keying, depending on where the brightness threshold value is set by the video card.

Mask

An opaque image used to block the view in one area, but with holes that allow the image to be viewed in other areas. An example is a mask of a car with holes for the windows, which allows you to view the background through the windows.

Mastering

Creating a final copy of the product in the form and on the proper media needed for duplication. Compact Disc mastering is a step requiring a glass master to be created usually in a hygienically "clean room." Videotape mastering may involve digital video recording of several sub-masters used to make copies from.

Matte

An ink that allows artwork to appear without a white bounding box around it.

Mesh geometry

The level of geometry at which the object surface is a matrix of polygons. Mesh geometry is edited by dragging the polygon vertexes.

Mesh

A matrix of polygons on the surface of an object. The mesh is subdivided into columns and rows.

MIDI (Musical Instrument Digital Interface)

A system of hardware interface specifications and software protocols which define how musical instruments talk to computers (and software.) It's a very compact format, but what comes out at the other end all depends what's going on inside your listener's computer. *WAV* and *MPEG* file formats put you in control.

Moiré pattern

A distracting and unwanted pattern within a bitmapped image. Usually it is caused by scanning or digitising a source graphic which was screened to create a halftone when printed in a book, magazine or newspaper. The moiré pattern is actually a set of sum and difference frequencies of the following things: the halftone frequency and angle of the printed graphic plus the resolution setting of the scanner (and angle of graphic on the faceplate of the scanner.) A moiré pattern is a form of "modulation product" seen visually. That is why line art, original colour or grayscale artwork, or continuous-tone photographic prints are the only kind of source graphics recommended for scanning or digitising.

Monochrome

An image comprised of tones of one colour hue (often grayscale.) Digitally, monochrome can be represented by a bit (binary digit) having a value of 1. Where there is no colour, the bit is equal to 0, which can represent either white or a second background colour of the image. Such an image has a pixel depth of 1-bit. The foreground colour and the background colour can both be defined in a one bit image. Having a second background colour is considered "contrary to Mac interface guidelines" for clarity when creating icons used for interfaces. 1-bit display monitors only display in black as the foreground colour and white as the background. To replicate shades of grays, a dithering technique for simulating shading may be part of the monitor support circuitry.

Moveable

In the score, controls whether or not users can reposition a sprite on the stage during playback.

MP3

Member of the fantastic *MPEG* family, MP3 is a *streaming audio* file format that can squeeze as much as a minute of CD-quality audio into 1MB. For comparison, an audio CD can hold up to 74 minutes of music, while a CD full of MP3s could hold ten hours of music. The best and fastest compression format out there.

MPEG (Motion Picture Experts Group)

Possibly the most popular video CODEC in the world, uses a *keyframe* approach. This is an incredible *compression* format for *video*, with little or no loss in quality. *DVD* uses MPEG format, and it should revolutionise *multimedia* on the Web. The equally stunning *MP3* is MPEG's audio twin.

Multi-scan monitor

A display monitor which can switch between one or more composite video formats, and usually a digital computer display format like RGB.

Multiple monitors

A way of setting up multimedia presentations for viewing by an audience, or by previewing while building a presentation for video output with a different video standard than RGB (computer output).

Noise

Random signals which are introduced into an audio or video signal. This can happen through dubbing a copy, transmission, or using bad equipment. In audio, noise is manifested as hiss, pops, clicks, and other spurious sounds. In video, noise is primarily seen as "snow" in the picture.

Normalise effect

Amplifies a sound to its maximum value without clipping or distortion.

NTSC

National Television Standards Committee-who created a colour video standard known as RS-170A currently in use in America, Canada, and Japan. This colour video standard was developed in 1953 to be compatible with black and white transmission. All such composite video standards are limited by its analogue bandwidth problems, and signal degradation through transmission and video recording. (1 second of video consists of 30 frames).

NuBus slots

Macintosh internal expansion slots for adding colour monitor cards, co-processor/accelerator cards, and such interface cards as: video input or I/O cards, device controller cards, etc. Access to cards is via connections through knockout holes in the rear of the computer.

Object-oriented graphic

A graphic image created when lines connect a series of co-ordinate points (as opposed to a bitmapped graphic made of horizontal rows of pixels.) For animation uses, object-oriented graphics slow down throughput. This is because the graphic must be converted to a bitmap every frame, before the frame is redrawn. The extra processing time slows down the whole animation.

Objects of rotation

Objects formed by rotating a profile around an axis. Objects of rotation have a basically circular structure; the structure can be a complete or partial circle. Lathed objects are objects of rotation.

Onion-skinning

An animation technique in which the next frame is overlaid on the previous one so that artists can draw changes with direct reference.

Opticals

Magneto-optical drives work rather like a cross between *removable drives* and *CD writers*. A laser is used to heat up tiny particles on the surface of the platter, and then a powerful electromagnet polarises the particle to either positive or negative, depending on whether it is to represent a one or a zero. When the particle cools, it can't be changed until it is heated up again. This makes optical drives resistant to electromagnetic interference, and almost impossible to corrupt. Many media manufacturers guarantee optical discs to last 50 years! This means they are ideal for long-term storage, but they tend to be slow - between 30% and 50% the speed of today's hard discs

Opticals come in two flavours: 640Mb (3.5 inch) and 2.6Gb (5.25 inch). LIM-DOW (Light Intensity Modulation Direct Overwrite) drives are a new innovation, and enable faster rewriting of data. Normally, an optical drive wipes data off the disc before new data is written on it, but LIM-DOW drives can write over existing data. This doesn't make copying any faster the first time you put data on a disk, it's only if you overwrite it that you see a difference. You need a special LIM-DOW cartridge, which costs a little more, but LIM-DOW drives will also read standard cartridges. LIM-DOW drives are available in both 640MB and 2.6Gb formats.

Overlay

The ability of a video I/O board to add animation frames from a computer on top of a video signal passing through it. Depending on the computer's throughput, and the type of animation, this may or may not be possible in real time. A frame-per-frame recording mode is more successful. Using certain video cards with the "overlay" feature, animation may be seen to be on top of live video.

PAL (Phased Alternating Line)

The predominate composite video standard of Western Europe. The colour video standard known as PAL-B CCIR 624 was developed in Germany in 1961.) As with the US Standard-NTSC, PAL is an analogue Composite Video standard which has the same kind of limitations on bandwidth which affect horizontal luminance resolution and colour resolution, and can degrade in transmission. The frame rate of PAL is 50 interlaced frames per second as compared to the NTSC rate of 60. (1 second of video consists of 25 frames) The PAL picture uses 625 scan lines instead of 525 lines for NTSC. (The dimensions of a typical PAL monitor are typically the equivalent of RGB spatial resolution 768 x 576 pixels).

Palette

A set of colours available to a computer user at any one time under the Macintosh indexed colour system used with images containing 2-bit through 8-bit pixel depths.

Parallel port

A hardware connection to exchange digital data with external devices along several electrical bus lines simultaneously. It is faster way of exchanging data than a serial port at the same clock rate (which has only one bus line.) The Mac SCSI port is such a parallel port.

Path name

Identifies where a file is located-the disk it's on, the folder it's inside, and so on.

PDF (Portable Document Format)

Acrobat file format containing embedded fonts and graphics.

Peripheral device

An external device which is connected to a computer. Such devices may include an external hard disk, CD-ROM drive, scanner, modem, touch-screen, laser videodisc player, CD audio player, videotape machine, etc. All devices must be interfaced to the computer.

Phase modulation

A type of modulation used in composite video to create a sub-carrier which piggybacks the chroma signal on top of the luminance signal. This keeps the two signals separate but available for compatible colour transmission.

Phase shift control

A feature on some high-end Video I/O boards allowing you to "fine tune" the Chroma subcarrier of an NTSC composite video signal for best colour fidelity. It is not needed on PAL video boards since the PAL colour standard has a built-in way to auto-correct for colour phase shift.

Phong lighting

Sophisticated lighting scheme for producing realistic lighting effects.

PICS

An animation file format developed for interchanging documents between animation and 3D programs. Each frame of a PICS file is a PICT file image which contains vector-object graphics or bitmapped objects. The format has a built-in compression algorithm used when saving to a hard disk.

PICT

the original graphic file format on a Macintosh (now extended in PICT2 and PICT2+ formats for colour and grayscale, etc.) It was a "picture-file format" with a direct correspondence to Macintosh QuickDraw graphic primitives. The format contains objects which can be either vector-based (object oriented), or bitmapped. The bitmaps exist within an object bounding rectangle. Multiple bitmapped objects or vector objects could be stored within the same PICT document. These objects within the same document can retain their independence for editing in other programs. Most graphic programs on a Mac can read and write PICT. PICT uses a compression algorithm to save space on storage devices. This algorithm is called "run-length encoding".

Pitch

Rotation around an x-axis.

Pitch (sound)

The psychological impression of the highness or lowness of a sound. Pitch is often used synonymously with frequency; the higher the frequency, the higher the pitch.

Pixel depth

The number of bits (binary digits) which represent the values of each pixel of a digital image. With 1-bit pixels, you can only represent black or white. 2-bits gives you 4 levels of grayscale or colour. 3-bits gives you 8 levels of colour. 4-bits gives you 16 levels of grayscale or colour. 8-bits gives you 256 levels of grayscale or colour. In 16-bit mode you have access to 15-bits, or 32,768 colours. 24-bits gives you about 16.777 million possible colours. They couldn't all fit on a 640 by 480 pixel screen at once since there are only 307,200 pixels on the standard monitor. 32-bit colour is actually 24-bit colour, since 8-bits are reserved for an Alpha channel-an 8-bit channel which is used for things like overlays and masking in colour software. The Alpha channel is used by several video I/O cards for overlaying animation. (The Alpha Channel in 16-bit Display Mode is 1-bit or monochrome, leaving 5-bits each for Red, Green and Blue colour values.)

Pixel map (abbreviated pixmap)

Data in computer memory representing sequential bits of an image. If each pixel of an image is represented by one bit then it is a monochrome image. Colour images require more than one bit per pixel, hence they are stored as pixel maps. But bitmap is a term which is now used interchangeably to mean pixel-mapped, no matter what the pixel depth.

Pixel

abbreviation for Picture Element. The smallest discrete part of a rasterised electronic image. On a computer display monitor, pixels are approximately square. Composite Video pixels are wider than they are tall because horizontal lines of resolution define their shape.

Plug-in

Both Netscape Navigator and Internet Explorer enable you to display non-standard content in your web pages using plug-in applications, small programs that read specific formats and display or play them 'in-line'.

You also get plug-ins for other applications, such as photoshop, premiere, etc, which extend the functionality of the program.

Polyline

A line made up of more than one line segment. Polyline can be used to create open or closed polygons, and can be smoothed to create spline objects.

Port

A hardware interface connecting a computer to external devices. The Macintosh has modem and phone serial ports, a SCSI parallel port, along with a printer port, and ADB port-for mouse, keyboard, or touchscreen control.

Post-production

A stage in production after filming or animation is completed, where short sequences are assembled into the final-length product. Post production includes editing sequences using transitions and superimpositions, sound sweetening, and other final steps. Video editing is made in two steps: off-line and on-line (similar to rough-cut and final-cut in movies.) In video post-production, transitions and special digital video effects may be created, using DVE (Digital Video Effects units, which are small computers.)

PostScript® graphic

An object-oriented graphic which is usually intended for high-resolution output on a PostScript® laser printer or imagesetter. A program like Macromedia FreeHand® creates such graphics.

Pre-mastering

Preparing a presentation for mastering and duplication. Steps may include transferring data or video to other formats, and on other media required by a mastering lab.

Printer port

A Macintosh port used exclusively for serial output to dot matrix and laser printers. It is not to be confused with the other two serial ports: the modem port and the phone port.

Profile

The 2D object that is used as the basis for creating 3D objects. For example, a circle is the profile used to create a cylinder.

Projectors

An executable on Macintosh or Windows, created by Macromedia Director® which can launch Macromedia Director movies by a double-click, and does not require Macromedia Director® to be present on the computer. That is because the Director® code is compiled as part of every Projector document. At the time you create a Projector, you have a choice of either embedding one or more movies within the document itself. When you embed a series of movies within a Projector document, this will also prevent someone from changing them who plays them.

Protocols

The software command codes and their syntax used to communicate with devices external to a computer.

Psycho-acoustic masking

Audio compression scheme used in low-end digital audio; compresses data by throwing away the parts that you're not supposed to be able to hear.

Quantize

To restrict the amplitude of the samples in a sound to integer values in a limited range. For 8-bit sounds, integer values between 0 and 255 represent the amplitude of each of the samples.

QuickDraw 3D

Apple technology that allows 3D objects to be viewed and manipulated across a wide range of applications.

QuickTime

Apple Computer's video compression and display technology.

QuickTime VR

Derivation of QuickTime allowing users to view 360-degree panoramas, and interact with objects within them.

Random-access storage device

Computer peripheral devices which allow access to any portion of the storage media (as opposed to a linear, sequential storage device like tape, which has to be rewound before playing back.) Examples of random-access devices are hard disk drives, floppy diskette drives, removable media cartridge drives, optical cartridge drives, and CD-ROM drives.

RealAudio

The godfather of audio streaming on the internet. Almost everyone has the RealPlayer needed to hear it, so it's a safe bet if your intending to use a lot of sound on your web pages. But MP3 is hot on its heels.

Real-time display

The ability of a video card to show video on a computer monitor as it is being played back. This is distinct from the ability to record frames real time on a hard drive (which would impossible in real time, since the Mac is not capable of 9 MB a second throughput for 8-bit frames, and 27 MB a second for 24-bit frames.) So for real-time throughput a video I/O card or box is used to pass video through to a video recorder. The overlay feature of some boards also allow you to add computer animation to video as it is being passed through the board.

Real-time recording

A mode of recording computer animation output as it is played back, or computer output overlaying video using a video overlay card as both are played back. This may not be as high-quality as a frame-per-frame recording, but if animation throughput is OK, it may suffice. A time-base corrector may be needed to stabilise images with overlaid video on a line-by-line basis.

RealVideo

RealAudio's video sister and the internet's favourite video streaming format. Like RealAudio, it's a safe bet, but MPEG and QuickTime are catching up fast.

Removables

Removable drives work on exactly the same principles as hard drives, except that the platters are not sealed inside the unit, but rather come in a protective cartridge. When the cartridge is inserted into the drive, a pair of read/write heads slip neatly either side of the platter, which is then spun on a central axis. From then on it works exactly the same way as a hard disc.

Because the platters are not fixed or sealed in an airtight environment they can't spin as fast as a hard disc - otherwise, instability could cause the read/write heads to crash into the surface of the platter, taking out big chunks of data. It's for the same reason that data tracks on the platter can't be packed as tightly together as they are on a hard drive. Because of this, generally speaking, removable drives can't hold as much data and aren't as fast as hard drives. However, recent advances in the technology mean that removables are challenging hard drives on both grounds.

There are two big advantages to removables: The media is entirely portable, and you can buy extra cartridges very cheaply, which in the long term makes for a very cheap storage solution. The drawback is that most removable media only has a reliable lifespan of between three and five years.

Rendering

The act of applying and displaying lights, materials, textures, and colours on an object. The process of producing final output in 2D and 3D graphics programs.

Resolution

The detail of an image. In various electronic imaging models this is defined in different ways. Video systems use "horizontal lines" to refer to the resolution of both the luminance signal and the chroma signal (which are different.) Computer device resolution is expressed in dpi (dots-per-inch.) Usually, this dot pitch refers to printers, or pixels (picture elements) of the display screen. It could also refer to resolution of an image created with a paint program, or a scanned image. Capture boards which translate video into a digital image cannot specifically measure video in inches. The reason is that you are looking at the world through a lens, instead of scanning a document which can be measured in inches. The only way of expressing resolution of video frames which are captured is with the concept of spatial resolution (which see.) This expresses resolution in terms of the size of pixel-map which contain it. This is referred to as spatial resolution. So if a capture board digitises an analogue video signal and translates it to a pixel-map of 640x480 pixels, that is the resolution of the image. The way to convert spatial resolution to dpi for multimedia, is to realise that all graphics will be seen on a display screen of a particular resolution. If it a standard 640 by 480 pixel colour monitor, the pixels will be displayed at 72dpi. Some 2-page displays will have up to 85 dpi.

Resource fork

A part of a Macintosh computer file containing commonly-used information which does not change as often as information in the data fork. Examples of resources would be: a bitmap representing a cursor, icon, or screen font. Macintosh files have two forks-one for data, and one for resources. This structure allows easy modification of interface resources without changing program code. The resource fork is also where Menu items, colour palettes, and tools icons may be kept.

Reverb effect

Creates the combined effect of multiple sound reflections within a room, giving a smooth and gradual decay of the perceived sound after a source stops.

RGB

An imaging model used by computers and professional Component Video systems. Red, Green and Blue signals (the primary colours of light) are maintained separately (as opposed to Composite Video which piggybacks chroma information on top of luminance information.) The signal channels are digital in computers and in newer Component Video systems.

Roll

Rotation around a z-axis.

Rollover

Graphic that changes as you move your mouse over it, click it and so on. A clear favourite for buttons. You make rollovers using an image for each mouse state. On the internet you may need to write a simple JavaScript to change the graphics when needed, but lots of good web design applications will do all the hard work for you.

S-Video

A video system which enhances Composite Video tape recording by maintaining separate (the "s"-word) luminance and chroma channels, while recording and playing back the signal at a higher bandwidth than broadcast Composite Video. This system improves the fidelity of the video signal compared to Composite Video.

Sampling rate

The number of intervals per second used to capture a sound when it is digitised. Sampling rate affects sound quality; the higher the sampling rate, the higher the sound quality.

Screen shot

A copy of part or all of the Macintosh display screen saved either in the Clipboard, in a scrapbook, or as a graphic file.

Script

A piece of code that controls the way objects such as sprites behave, or the way programs interact; usually called a script to distinguish it from a program, which is generally compiled.

SCSI port

A parallel port used on Macintosh II series computers, pronounced "scuzzy." (SCSI is an acronym for Small Computer Standard Interface.) Up to 7 auxiliary devices may be used in a "daisy-chained" fashion, connected to each other and interchanging data with the computer. SCSI devices include external hard disks, removable Bernoulli cartridge drives, the Apple Personal LaserWriter SC, scanners, and various CD-ROM drives, and optical cartridge drives. See also serial port.

Search Engine

Sites like Yahoo and Altavista scan and catalogue pages on the WWW. You can then use their search engines by keying in the keywords your looking for to find sites containing that information. Try www.yahoo.com or www.altavista.com. You can also include a search engine on your web site or multimedia application to help users find exactly what they're looking for, quickly.

Sequential-access storage device

A computer peripheral which writes and reads data sequentially, and must be rewound. Examples are old-fashioned multi-channel digital tape drives, removable media cartridge drives, digital tape cassette drives, etc. Most of these are used for backup only.

Serial port

A type of port used on personal computers to communicate with external devices. The Macintosh computers have two serial ports which conform to the RS422 communications standard: the printer port and the modem port. The printer port is used to connect with the AppleTalk network for sending data to and from LaserPrinters, AppleShare file servers, Tops Network servers, etc. The two serial ports can be switched from the Control Panel or a Control Panel CDEV. Serial ports can only transfer data one bit at a time, so they are slower than a parallel port like the Macintosh SCSI port.

Server

A computer that you connect into to do something you can't or don't want to do directly with yours. You use a Web server to see and store web pages, a mail server to deal with e-mail, and so on. Web servers are connected to the internet 24 hours a day, and deal with a lot of traffic.

Shade

A rendering style in which a tone pattern is drawn on each polygon in the object. The object retains its polygonal appearance.

Shaded wire

A rendering style in which the object is drawn with flat shading and with lines defining the object edges.

Shockwave

A format for streaming brilliant animated interactive content on the internet. The technology was developed by Macromedia to get Director movies going on the Web, and 'shocked' sites are some of the best going - www.macromedia.com/shockzone is the best place to go for the cream of the crop. You'll need a plug-in to make it work, which you can download while your there.

SIG or Special Interest Group

A group of computer users who meet regularly to exchange information about a particular way of using their computers. Examples are Graphic SIGs, Multimedia SIGs, etc.

Skin profile

A 2D profile that is underlying geometry for a skinned object.

Skinning

Stretching a surface over cross-sections of profiles.

SMPTE time code

A synchronisation code for use with audio and video devices which must run in frame-accurate sync with each other. Most often such devices are multi-track audio tape recorders, as well as video tape machines. One machine records a SMPTE stripe.

SMPTE (Society of Motion Picture and Television Engineers).

Also the name of a method for coding videotape for use in the editing process. SMPTE timecode exists in four formats: 30 fps (NTSC), 25 fps (PAL/SECAM), 24 fps (film), and 29.97 fps (drop frame).

Sound quality

The sampling rate, sampling resolution, and compression ratio of a sound.

Sound resource ('snd')

A file format supported by the Macintosh system software. Apple defines two types of sound resources: Format 1 and Format 2. Format 2 sound resources are used by HyperCard; all other applications use Format 1 sound resources.

Spatial resolution

Resolution of a digital image as an expression of the size of the pixel map containing it-such as 1024 x 768, or 640 x 480. Frame-grabbers convert video from a camera or other source into a digitised image. This is because the image originated through a camera lens focused on a subject some distance away. So, in this case, dpi is a meaningless concept Resolution can only be measured by the size of the pixel map which will contain the final digitised form of the image. The way to convert spatial resolution to dpi for multimedia, is to realise that all graphics will be seen on a display screen of a particular resolution. If it a standard 640 by 480 pixel colour monitor, the pixels will be displayed at 72dpi. Some 2-page displays will have up to 85 dpi.

Spectrum

A graphic representation of a sound, showing power (z-axis or colour) over frequency (vertical, y-axis), and time (horizontal, x-axis) y-axis. Since sound is perceived in terms of frequency content, a spectrum is often an intuitive way to examine sound.

Spline curve

A 2D curve passing through two or more control points. The tangent line through each control point determines the curve's shape near the point. Spline curves are also known as Bezier curves.

SMPTE Timecode (Society of Motion Picture Engineers)

A standard used to catalogue video in Hours, Minutes, Seconds and Frames. *See Hours:Minutes:Seconds:Frames for more information.*

Sprite

A small graphic drawn independently of the rest of the screen.

Streaming

Allows video and audio to be played across the internet in real-time; usually you have to download the media item first, which takes longer than playing it - streaming lets you hear what the server sends out almost instantaneously. RealAudio, RealVideo, MP3, QuickTime and ShockWave are ideal for this.

String

A sequence of one or more characters consisting of letters ("Mary Wagner"), numbers ("49931"), special characters ("*/"), or a combination ("Total is £5.00").

Surface geometry

The level of geometry at which the object surface is a matrix of spline-based control points.

Surface normal

A line that extends out perpendicularly from the surface of an object.

Sweep path

A curve along which a profile is extended to create a swept object.

Sweep profile

A profile that is extended along a sweep path to create a swept object.

Sweeping

Extending a 2-D profile along an arbitrary path in space.

Sweetening

Adding multi-track audio in synchronisation with a final video presentation. Because of the complexity and hardware requirements, this step is usually done at a video or audio post-production studio set up for this service.

Syntax

The format of a function. You need to follow the syntax in order to use the function. The syntax includes one or more arguments enclosed in parentheses.

System unit

The part of a computer which contains the CPU, memory, power supply, system clock, internal disk drives, expansion slots. etc. In Macintosh computers, this is a separate hardware component from the monitor.

System

Can refer to operating system on a computer, Video standard, RGB imaging standard, or a configuration of hardware components.

Tangent line

The line tangent to the curve of an object's surface at a control point. Dragging the tangent line modifies the object's surface near the control point.

Time base

The time base used for video in North America equals 30 frames per second (fps); therefore, a 1-second clip contains 30 frames. Many countries use a video standard with a 25-fps time base. Film plays at 24.

Time-base corrector (abbreviated TBC)

A digital device used to stabilise analogue video. It corrects for mechanical and electronic errors introduced into the signal by transmission or recording. For the signal from early helical-scan tape recorders to be stable enough for broadcast standards, a time-base corrector was necessary. Some time-base correctors also convert component video signals into composite video and vice versa.

Touch-screen

A transparent device which fits over a computer display monitor and usually plugs into an ADB connector, replacing the mouse of your computer. Such an interface allows simple interactivity for use in information kiosks or for children.

Touch sensitive

A touch sensitive overlay goes over a normal monitor so you can directly touch and manipulate objects on screen - common in kiosks.

Transition

A visual effect that occurs between two different frames.

Trigger

A trigger is an action the user takes, such as clicking or double-clicking, to make an OLE object respond.

Tweak

Tweak means to move a small distance.

Tween

From the word "between." In traditional cell animation, "tweening" is the creation of artwork between key frames that changes shape and position. See also "in between."

UCD

User code document, a transparent extension to the conventional DLL used in Authorware.

URL (Uniform Resource Locator)

In English, that's an address for a web page or other file. It's what you type into your browser address bar, and what's coded into links to make them work - it's the key to the internet.

User group

A group of computer users who meet regularly to exchange information about a particular kind of computer, or the use of particular application software. Examples are Macintosh® User Groups, HyperCard® User Groups, and Macromedia Director® User Groups which are formed in various cities in the world. Presentations from dealers and developers are often made at user group meetings, and members exchange sample files, and trade freeware and shareware.

Variable

A value that can change. Authorware creates and updates many -built-in system variables automatically. You can also create your own variables to store information you need to keep track of.

Vector

At its simplest, a line. It also describes the way programs like FreeHand store data, as relationships between curves and lines. Vector-based software is resolution dependent, because it simply redraws as you zoom in, or for different output media.

VHS

A consumer analogue videotape format, usually using 1/2" video cassettes. A Super-VHS format utilises the S-video standard where the chroma and luminance signals are recorded separately for better picture fidelity.

Video converter (or encoder) card

A hardware device for outputting digital images from a computer and converting them to an analogue video signal. If the card is just a converter, and not a video I/O card, it will not have a way to pass video through from another source at the same time. Such a converter is a form of DAC (abbreviation for Digital to Analogue Converter.)

Video display

A television monitor which can display a particular video standard (usually NTSC or PAL.)

Video i/o board (or box)

A printed-circuit board or box which can convert video to RGB for display on a computer monitor, and if it has overlay capability, can also display a computer animation on top of the video. It passes the signal through to a video recorder, and contrary to misconception, does not provide the ability to "record on the hard disk of the computer." That is not possible until real-time co-processor boards are developed with the ability to encode or decode 9 Megabytes a second in real time for 8-bit colour, and 27 Megabytes a second for 24-bit colour. (You would also need one heck of a large disk drive to store a few minutes of video.)

Video input board

A hardware device for bringing in video-either by grabbing a frame and storing it (allowing you to save it as a graphic file), or by displaying it on a monitor, or both. No provision is made for video overlay or genlock unless specified on such a board.

Video projection system

A hardware device or devices which project onto large screens video output, and usually RGB computer output as an option. It is used for large presentations and may include special video effects. A signal splitter (such as one made by Extron) is often used to divert the output from an RGB monitor display card so it can drive both the computer monitor and a second monitor or RGB video device without loss of signal quality to either device.

Video special effects card

A printed circuit card, sometimes part of a video I/O card, or requiring one as a motherboard. It provides various additional capabilities for video display such as video-in-window for re-sizing the on-screen picture or visual transitions.

Video standard

A system of rules defining how electronic images are encoded into electronic signals for Television broadcasting, cablecasting and video recording. Two widely used standards in the world are referred to as NTSC and PAL.

Video tape recorder formats

May be reel-to-reel or cassette. Reel-to-reel is used by professionals and is usually on 1" tape in the C format. Cassette formats include professional 3/4" Sony U-matic and Betamax, and for 1/2" consumer decks: Betamax, VHS, and Super-VHS.

Video-in-Window

A feature of some video input, I/O, or special effects cards to be able to re-size an incoming video image within the frame, for real-time display, or when overlaying it with computer animation.

View

The position from which you view a model. By changing your view of the model, you can see it from different angles. You can create and save different views of the same model.

WAVE or .WAV (Waveform Audio)

A standard sound format for the Windows platform which codes sound as a waveform - bit like a bitmap, really. A devil on the internet for anything more than a few seconds, since the files are pretty sizeable. Try MP3 for anything longer over the internet.

Waveform

A graphic representation of a sound, showing amplitude (vertical, -y-axis) over time (horizontal, x-axis).

Web

Popular term for the World Wide Web. *See* WWW.

Web page

A document in HTML on the web, which you open in a browser to view. You can also open it in a word processor to see and edit the HTML code itself. Or you can open it in a web page editor.

Web site

Collection of web pages which go under a site name. Strictly, all files stored under a single domain.

Wireframe

A rendering style in which objects are drawn as lines only, without fill.

Workspace

The portion of the world that is visible on the computer screen. This is the portion of the world in which models are created.

World

A simulated three-dimensional space in which MacroModel operations are performed. MacroModel's world is much larger than the actual space that you view on the screen.

WORM

Write-Once Read Many laser optical cartridge drives. These high-capacity storage devices contain about 400 megabytes (unformatted) on each side of a 5" cartridge. You can write a file, but can never erase it. This format is good for a project in progress, to keep all previous versions of files, just in case. It may also be one of the few mediums which you can use to pre-master a CD-ROM. See the section on Mastering regarding limits of the Macintosh HFS file system.-XCMDs and XFCNs.

WWW (World Wide Web)

Network of graphic / hypermedia documents on the Internet that are connected through HyperText links. Strictly speaking, all the files connected into the http protocol, or the global network of http servers.

WYSIWYG (What You See Is What You Get)

Used to describe Web design software and other applications that try to show you what you're doing the way it should look when viewers see it. An easy alternative to not seeing what you get - like when you write your own HTML.

XCMDs

Resources that contain executable code that a Macintosh application can call to perform specific tasks. You can write an XCMD in almost any programming language; C and Pascal are commonly used.

XObjects (XCOD resources)

Code resources used to extend the Lingo® language of Macromedia Director®. Extensions of the language may include utilising system routines and resources, reading and writing files, polling data ports, talking to device drivers for control of external devices. These resources are installed into the resource fork of a movie document file. Another way of accessing them is to use the "openXLib" command within an interactive movie. This command links the movie to another movie containing the XCOD. Director 4 extensions executed via Lingo.

XTra

Cross-product open architecture for extending the capabilities of Macromedia products.

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